KUZNETSOV, V.I.; NEMODRUK, A.A.

Improved synthesis of the reagent "Stilbazo." Part 2. Synthesis with complex compounds. Zhur.ob.khim. 25 no.1:131-132 Ja '55. (MLRA 8:4)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.Vernadskogo Akademii nauk SSSR.

(Chemical tests and reagents) (Stilbenedisulfonic acid)

KUZNETSOV,V.I.; ARBUZOV,A.Ye., akademik, redaktor; KATRECHKO,D.A., redaktor; SIMKINA,Ye.N., tekhnicheskiy redaktor

[Development of the chemistry of metalorganic compounds in the U.S.S.R.]Razvitie khimii metalloorganicheskikh soedinenii v SSSR. Moskva, Izd-vo Akademii nauk SSSR, 1956. 220 p. (MLRA 9:4)
(Organometallic compounds)

KUZNETSOV, V. I., MYASOYEDOV, G. S. and MITROFANOV, Ye. V.

"Use of the Phenomenon of Complex-Formation in the Precipitation of Micro-quantities of Elements with the Aid of Organic Precipitants," a report presented at the USSR Conference on Application of Tracer Atom Methods in Chemistry of Complex Compounds, Kiev, 5-8 October 1955, described in article by Z. A. Shek, Zhur. Neorgan. Khim., 1, No.2, 1956

KUZNETSOV, V.I.

USSR/Inorganic Chemistry - Complex Compounds C.

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4123

Author : Kuznetsov, V.I., Myasoyedova, G.V.
Title : Use of Organic Coprecipitants in Study of Reaction Course in Highly Dilute Solutions.

Orig Pub : Zh. neorgan. khimii, 1956, 1, No 3, 579-585

Abstract : Organic coprecipitants (OC) are chosen for investigation of the reactions of complex-formation (K) or of redox in very dilute solutions, in such a manner that OC is precipitated in conjunction with only one kind of ions of the given element while the other remain in solution. To study the velocity of KCr(3+), tagged with Cr^{51}, with Eriochrome Blue-Black T (I), use was made, as OC, of the precipitate formed on interaction of I with Methyl Violet (II). This precipitate entrains, at pH 4, only the complex of Cr(3+) with I. Hence on adding II after various predetermined time intervals

Card 1/3 - 32 -

USSR/Inorganic Chemistry - Complex Compounds C.

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4123

following incorporation of I into the Cr(3+) -containing solution and determining thereafter the activity of the precipitate an opinion is formed concerning the kinetics of K. Curves of K kinetics in 2.10 and 2.10 M solutions of Cr(3+), at 50°, coincide. At 70° rate of K is considerably higher than at 50°. To study kinetics of the reaction $Tl^+ + 2FeCl_4^- \rightleftharpoons TlCl_4^- + 4Cl^-$ (1) there is used

as OC the precipitate formed on interaction of p-dimethylamino azobenzene with Methyl Orange (III). This OC entrains only $TlCl_4^-$, without precipitating Tl^+. In a sosution wherein the concentrations are: Tl^+ 2.4 . 10^{-9}M, HCl 0.2N, $Fe^{3+} = Fe^{2+}$ 1.10^{-4}M, the equilibrium (1) becomes established at 20° within ~ 3 hours. The method of OC is suitable for the study of distribution of elements between various complex-forming agents, provided that: a) the OC entrains only one of the complexes that are

Card 2/3 - 33 -

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4123

formed, b) the ionic equilibria do not become established too rapidly, and c) these equilibria do not change very much during coprecipitation. As a result of study of the distribution of Zn (tagged with Zn^{65}) between such complex-forming agents as NH_4SCN (IV) and Complexon III (V), it was ascertained that the extent of coprecipitation of Zn changes little with concentration of Zn, but depends greatly upon the concentration ratio of IV:V. As OC was utilized the precipitate that is formed on interaction of II with [illegible]. In the opinion of the authors the state of ionic equilibria in the solution does not undergo substantial changes during the coprecipitation.

Card 3/3 - 34 -

KUZNETSOV, V. I.

USSR/Physical Chemistry. Thermodynamics, Thermochemistry, B-8
Equilibria, Physical-Chemical Analysis, Phase Transitions.

Abs Jour: V. I. Kuznetsov, Ye. V. Mitrofanova
Inst :
Title : Extraction of Mercury Chloride with Mixed Solvents

Orig Pub: Zh. neorgan. khimii, 1956, 1, No 5, 1117-1121

Abstract: The process of extraction of $HgCl_2$ from aqueous solutions containing 1.35 mg per 1it of $HgCl_2$ and 60 percent of $Ca(NO_3)_2$ by the members of homologous series of n-alcohols and methyl-n-alkyl-ketones, as well as by mixtures of lower members of these series and n-heptane imitating these solvents was studied. The contents of mercury chloride in the aqueous and organic layers were determined by the method described earlier and based on the titration of mercury with potassium iodide (RZhKhim, 1957, 19551). The factors of the distribution of mercury chloride (K = C (org) / C (aqu)) were computed basing on experimental data. The extracting action of mixtures imitating the individual solvents with their com-

Card 1/2

USSR/Physical Chemistry. Thermodynamics, Thermochemistry, B-8
Equilibria, Physical-Chemical Analysis, Phase Transitions.

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14717

Abstract: position coincides with the extracting action of the individual solvents within the determination errors.

Card 2/2

KUZNETSOV, V.I

USSR/Analytical Chemistry - General Questions, G-1

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 1186

Author: Kuznetsov, V. I.

Institution: Academy of Sciences USSR

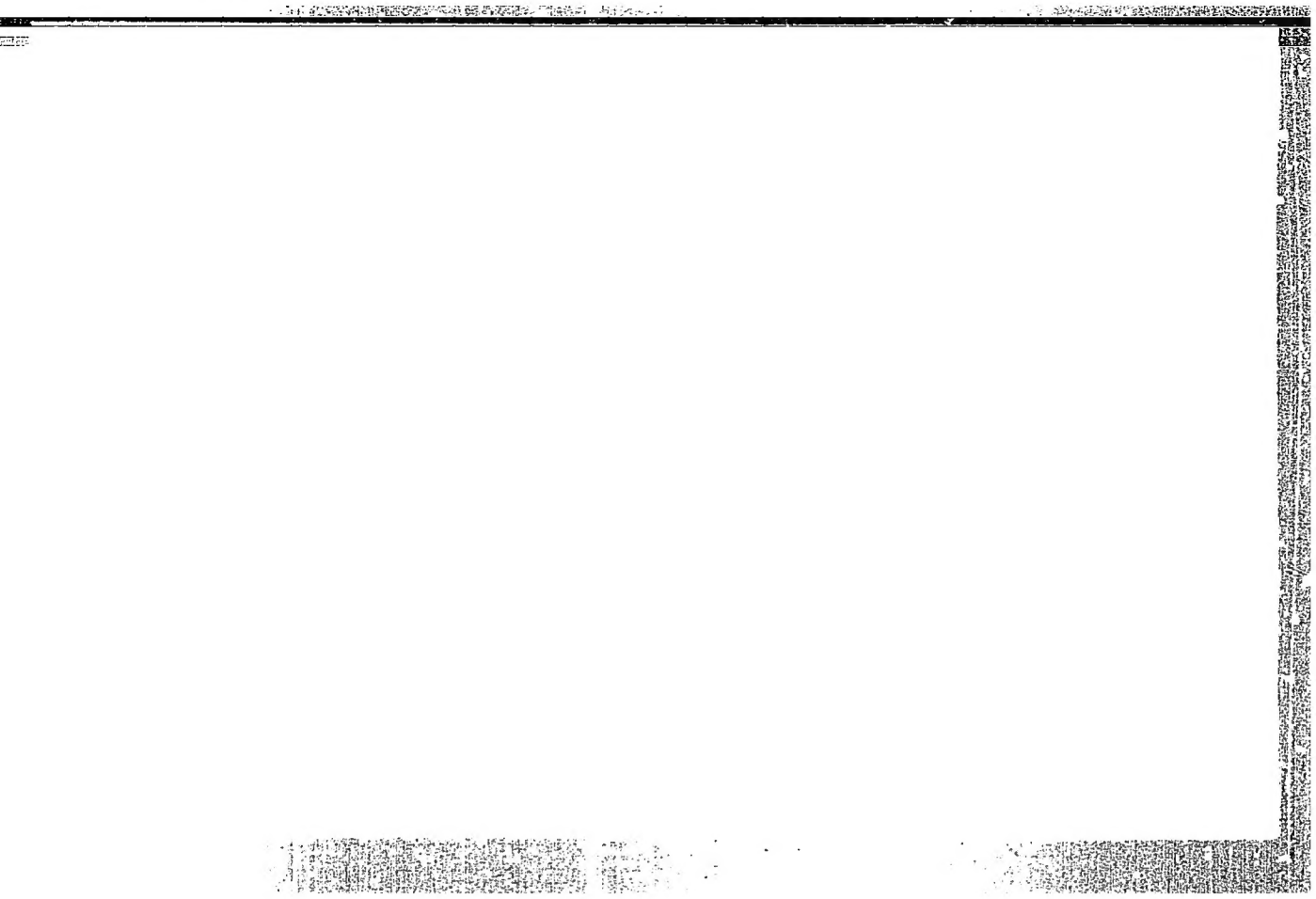
Title: On the Color Reactions of Phenols with Ferric Chloride

Original Periodical: Tr. komis. po analit. khimii AN SSSR, 1956, Vol 7, No 10, 174-193

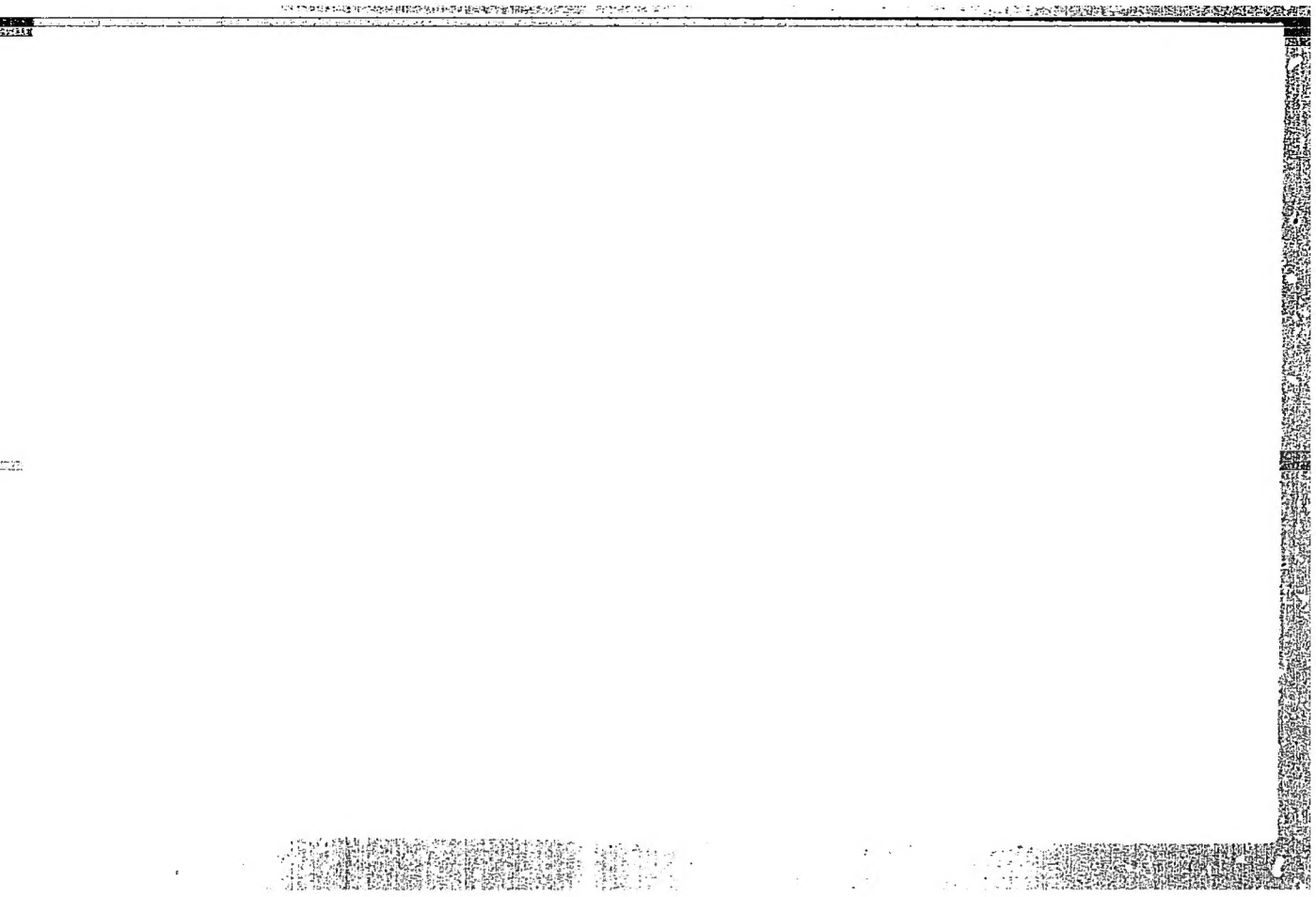
Abstract: The reactions of phenols (Ph) with $FeCl_3$ have been studied. It has been established that the color of the resulting ferriphenol complexes is due to the chromophoric action of Fe in the Fe(III)-O state and does not differ from the color of organic compounds containing other chromophore groups. The intensity of the resulting color depends on the effect of the ionic state of the complex (including the intramolecular ionic structure), the pH, the nature of the substituents on the pH nucleus, the temperature and other factors which exert a similar influence on the color of organic compounds. Acidification and introduction of electron-donor substituents (OH, CCH_3) on the Ph

Card 1/2

2/2



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210008-1"



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210008-1"

KUZNETSOV, V.I.; KOSHELEVA, G.N.

New acid-base indicators for small pH values. Zhur.anal.khim. 11 no.2:208-211 Mr-Ap '56. (MLRA 9:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov, Moskva.
(Indicators and test papers) (Hydrogen-ion concentration)

KUZNETSOV, V. I.

USSR/Analysis of Inorganic Substances. G-2

Abs Jour: Ref Zhur-Khimiya, No 6, 1957, 19551

Author : V. I. Kuznetsov, Ye. V. Mitrofanova
Inst : -
Title : Exact Volumetric Determination of Gamma Quantities of Mercury.

Orig Pub: Zh. Analit. Khimii, 1956, 11, No 4, 423 - 429.

Abstract: It is proposed to titrate the salts of Hg (2+) with J^- using, as an indicator, the disodium stilbene-4.4'-bis-[<azo-5>-8-hyrdoxyquinoline]-3.3'-disulfonate (stilboxine) (I), which produces, together with a series of elements, among them with Hg, colored reactions connected with the presence of intermolecular dissociation in the

Card 1/3 - 33 -

USSR/Analysis of Inorganic Substances.

Abs Jour: Ref Zhur-Khimiya, No 6, 1957, 19551

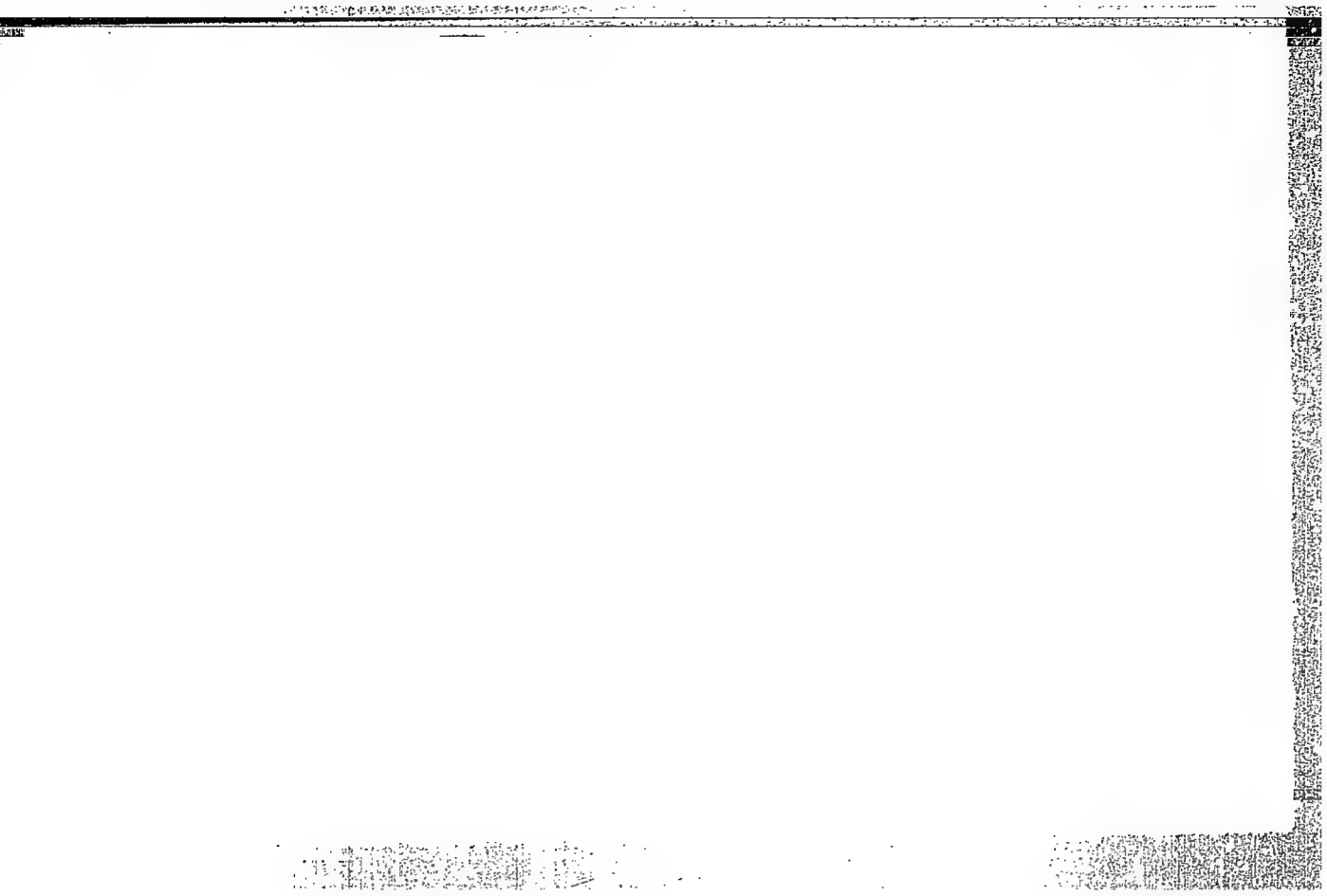
forming cyclic salts. The coloration tint of solutions varies from brownish to violet depending on the pH of the medium. The method is applicable to the determination of Hg (2+) in pure nitrate, acetate and chloride solutions; bromide of Hg (2+) is determined less accurately. 0.5 - 0.2 ml of the analysed solution (neutral or $\leq$ 0.001 n. referring to HNO_3 or CH_3COOH) are placed into a test tube, the same quantity of water (or a little more) is poured into another test tube, and the same quantity of the solution of I containing Hg (2+) (0.4 - 1 ml) is introduced into each test tube, and 0.5 - 1 ml of the acetate buffer solution of pH 4.5 is added to each. The analysed

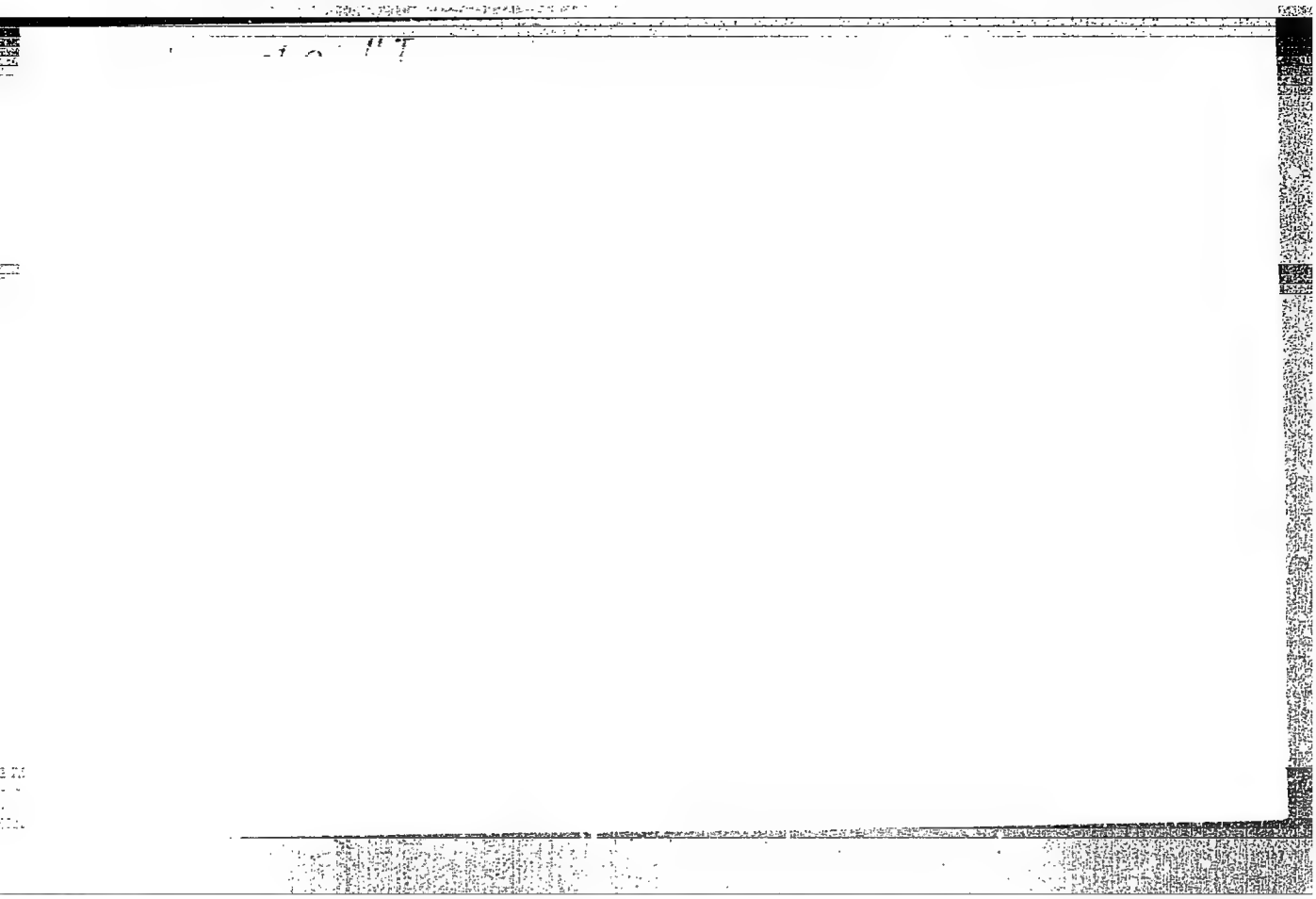
USSR/Analysis of Inorganic Substances G-2

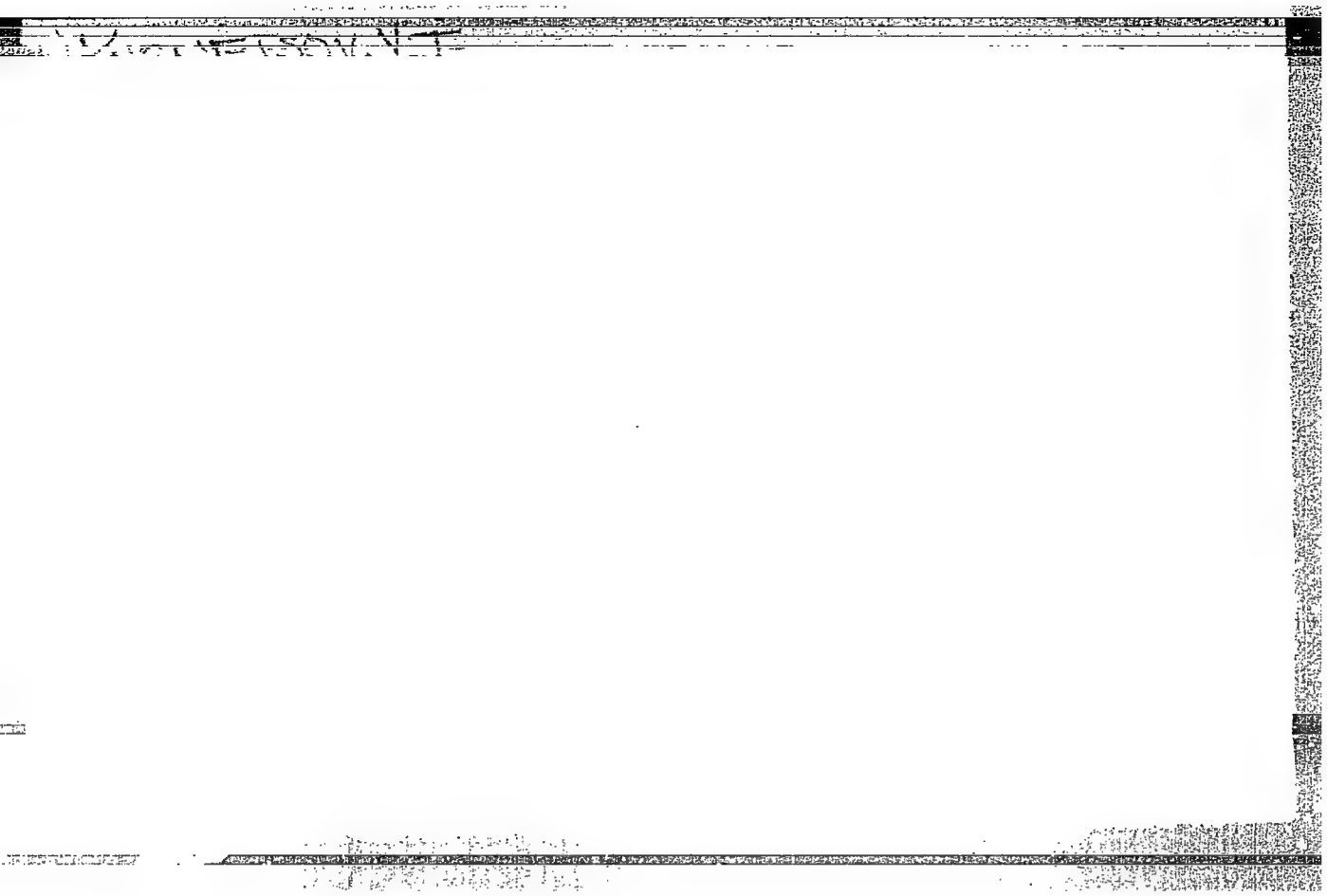
Abs Jour: Ref Zhur-Khimiya, No 6, 1957, 19551

solution is titrated with the KI solution with the described indicator. Heavy metals producing complexes with I are interfering. Considering that the methods of Hg separation based on its distillation guarantee the elimination of other elements, the authors are of the opinion that the not sufficiently high selectivity of the method does not introduce substantial complications. In a volume of 4 - 10 ml, 0.5 - 1000 γ of Hg are determined with an error of 0.5 - 1%. A synthesis consisting in the diazotization of the diaminostilbene sulfoacid and the combination of the obtained bisdiazo compound with 8-hydroxyquinoline is described.

Card 3/3







KUZNETSOV, V.I.

2

2670 Colorimetric determination of small amounts of aluminium in chromium - nickel and magnesium alloys. V. I. Kuznetsov and K. B. Golubeva. *Zavod. Lab.*, 1956, 22 (2), 161-162. Methods based on the use of "arsenazo" are described. To determine Al in chromium - nickel alloys, the sulphate solution obtained after an initial attack on the sample (0·1 g) with HCl and HNO_3, followed by evaporation with H_2SO_4, is electrolysed with a mercury cathode, and the electrolyte is then evaporated and made up to 50 or 100 ml in a calibrated flask. An aliquot portion is treated with cupferron to remove Ti, Zr and Nb, the excess of reagent is removed from the filtrate by evaporation with H_2SO_4 and HNO_3, and the solution is evaporated until H_2SO_4 is completely removed. The residue is dissolved in water, the solution is neutralised with aq NH_3 and then made slightly acid with HCl, traces of Fe are reduced with ascorbic acid and the Al is determined colorimetrically with arsenazo. To determine Al in magnesium alloys, the solution of the sample (0·05 g) in HCl is diluted to 100 ml, and an aliquot portion, treated with cupferron if necessary to remove Ti or Zr, is reduced with ascorbic acid and then mixed with the reagent. G. S. Smith

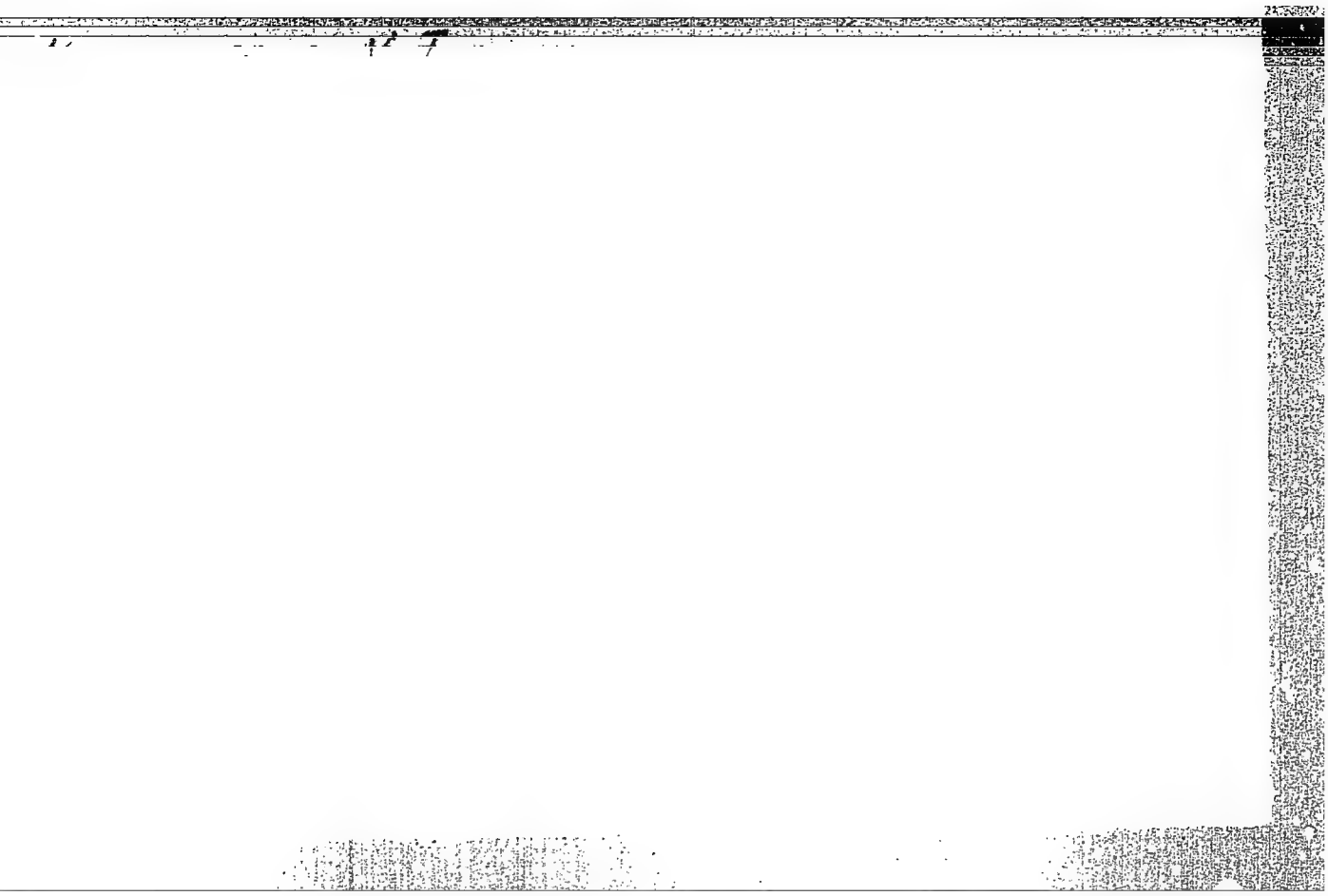
Chem

6
0
0
0

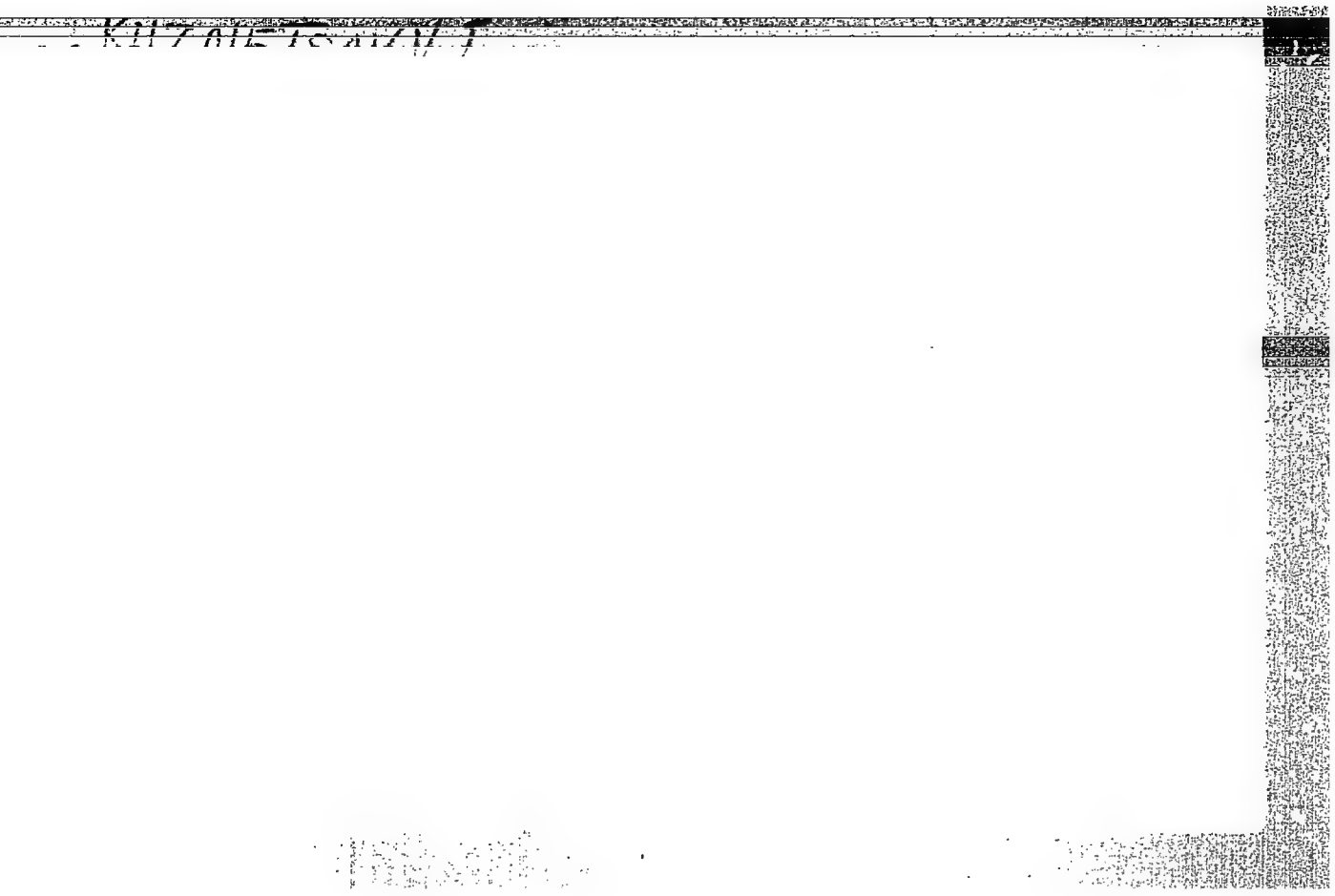
KUZHETSOV, V.I., professor, doktor khimicheskikh nauk.

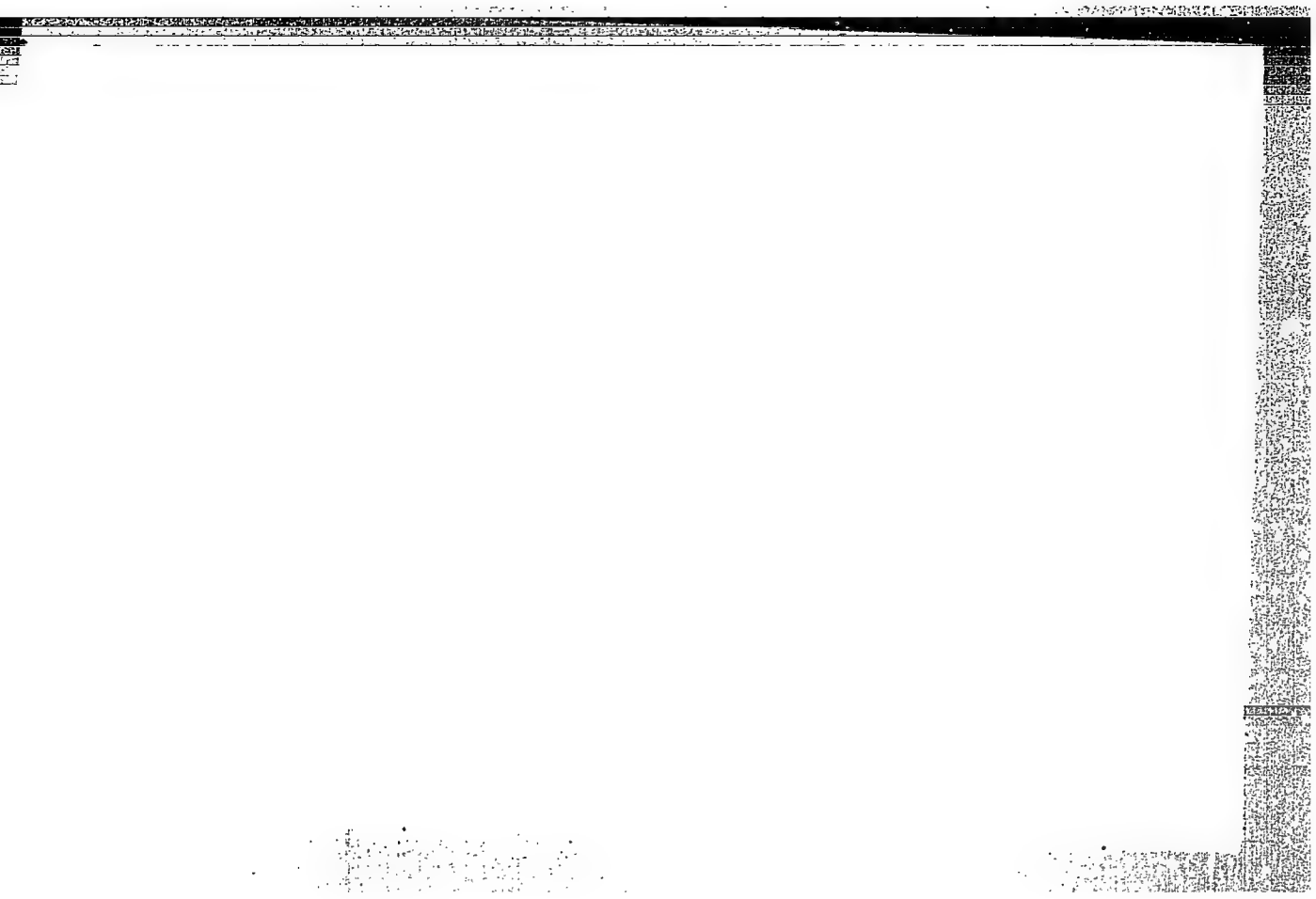
The economy of reagents has been neglected. Zav.lab. 22 no.3:369-371 '56. (MLRA 10:5)

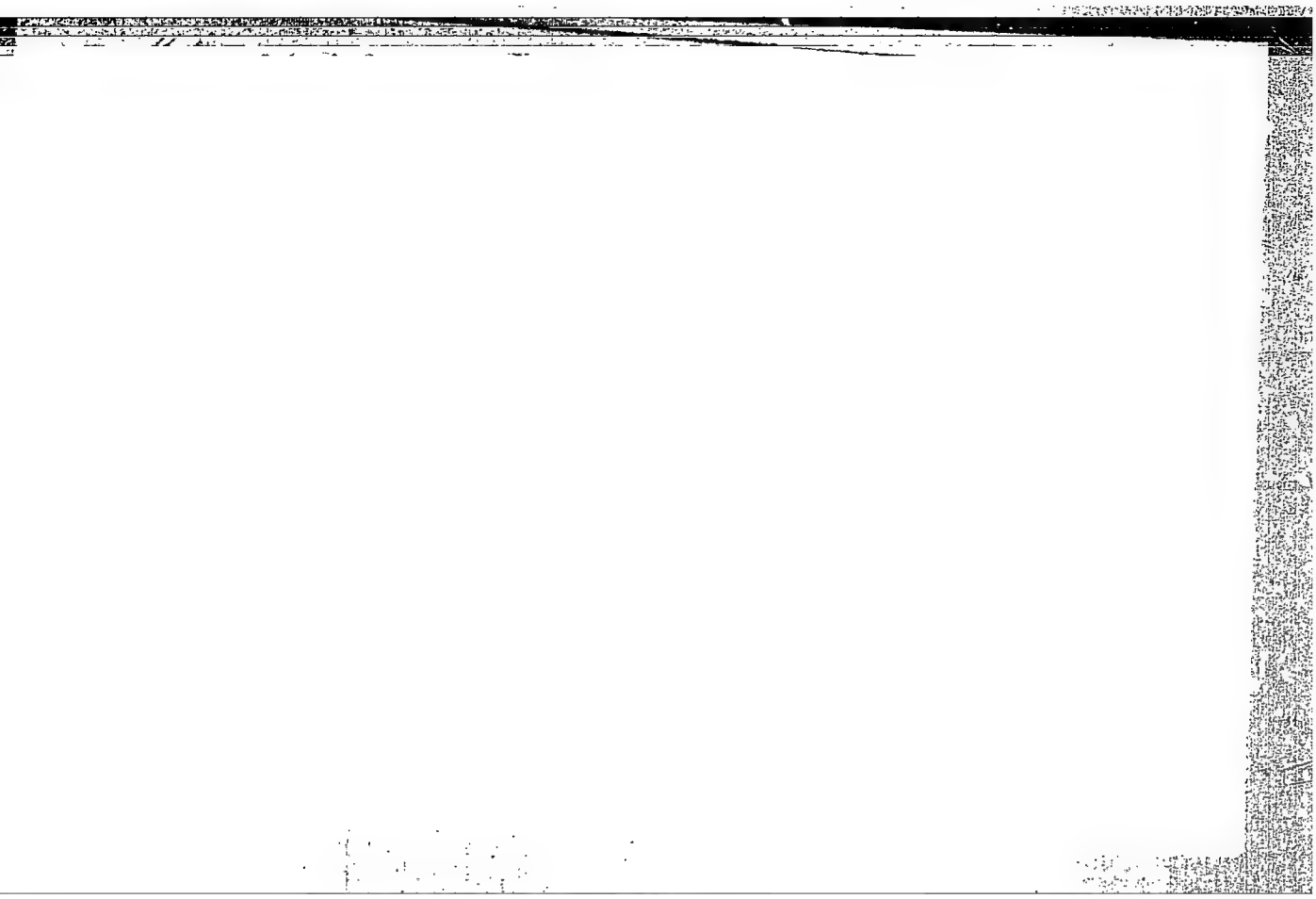
1.Institut geokhimii i analiticheskoy khimii Akademii nauk SSSR.
(Chemical tests and reagents)



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210008-1"



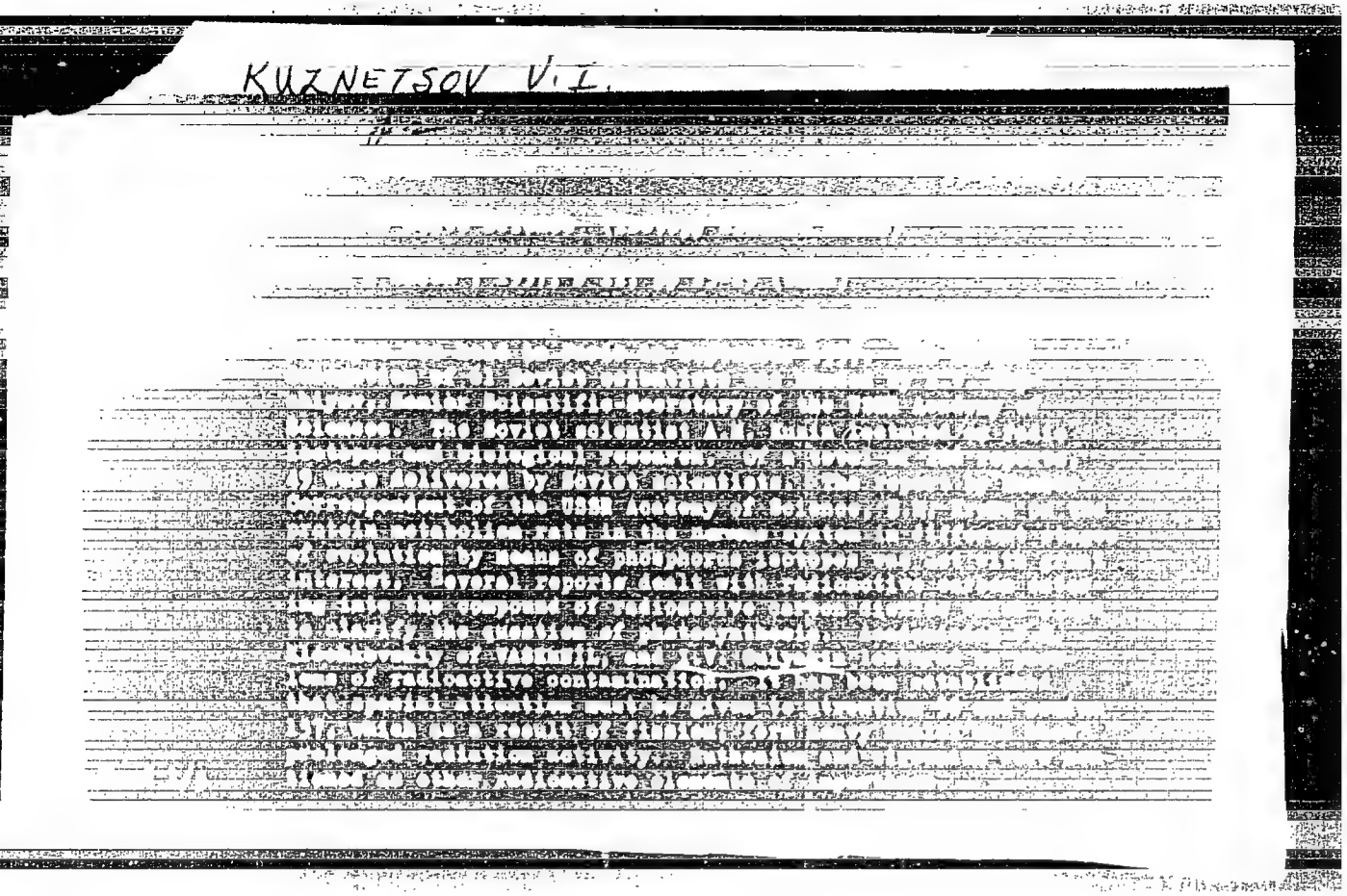


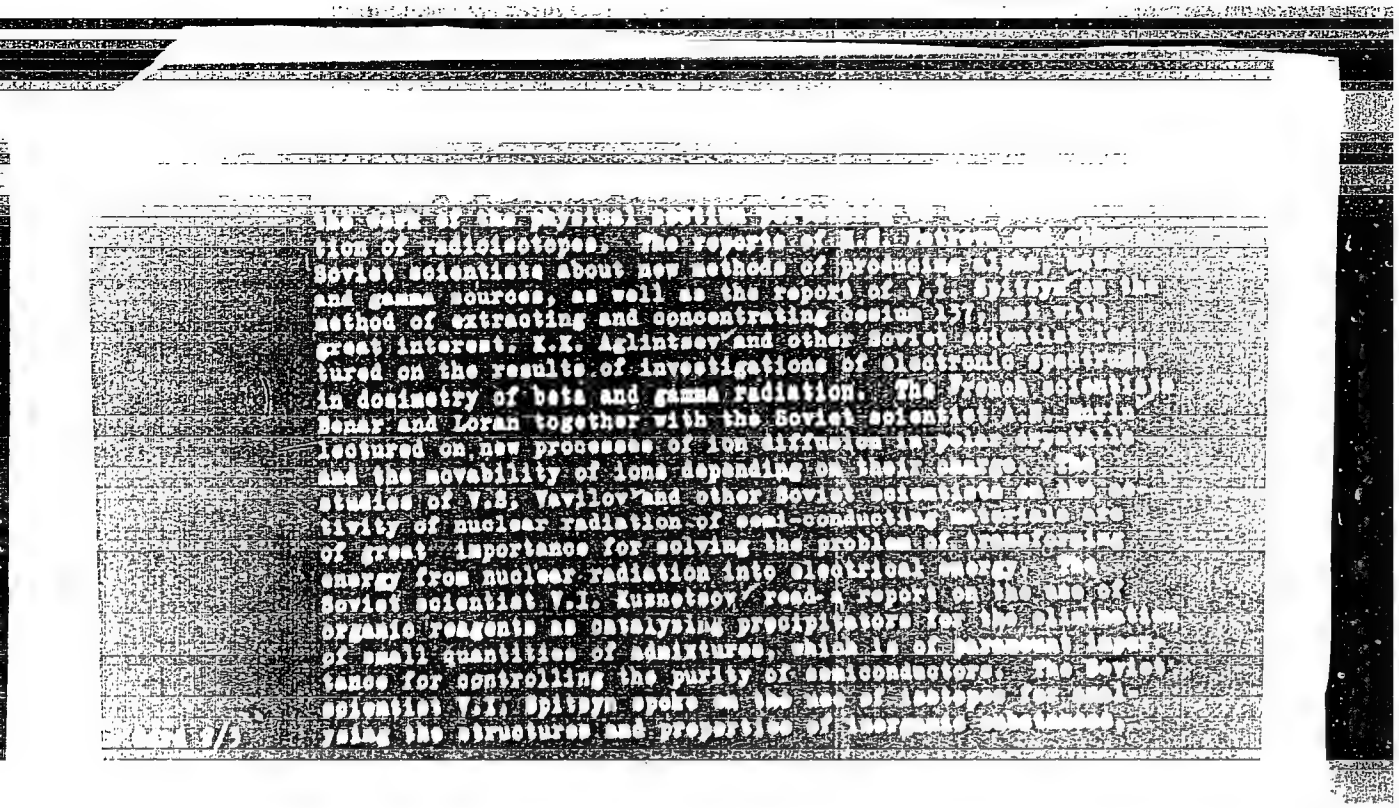


APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210008-1"

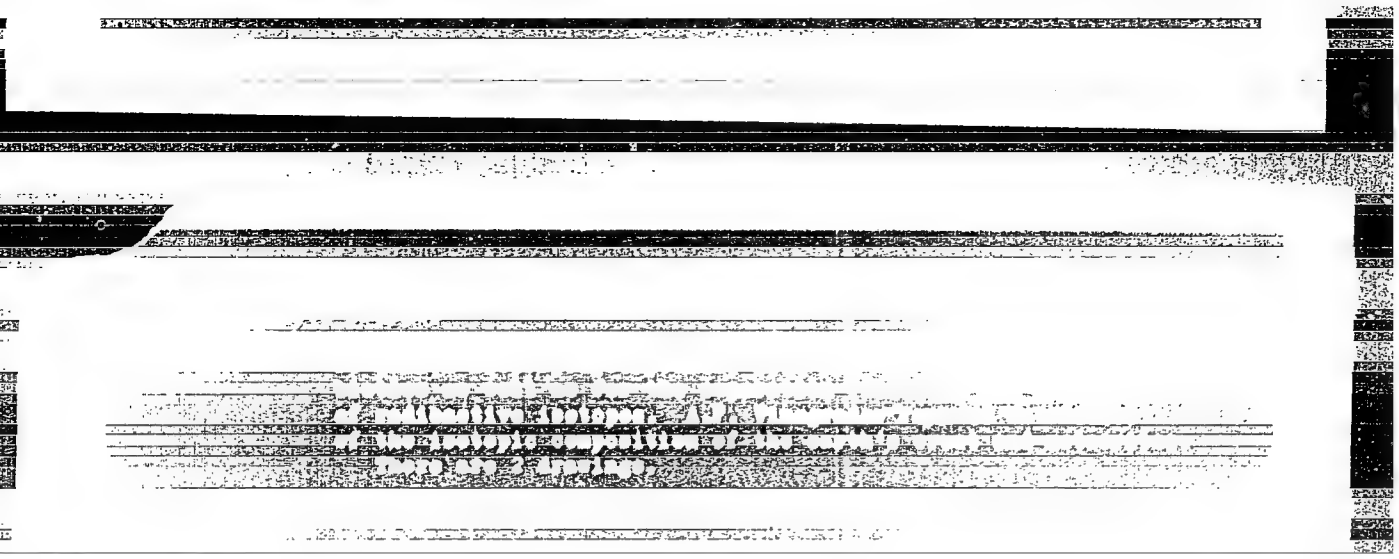
KUZNETSOV, V. I.

"Using radio-active isotopes in elaborating new methods in analytical chemistry: organic co-precipitants," a paper submitted at the International Conference on Radioisotopes in Scientific Research, Paris, 9-20 Sep 57.

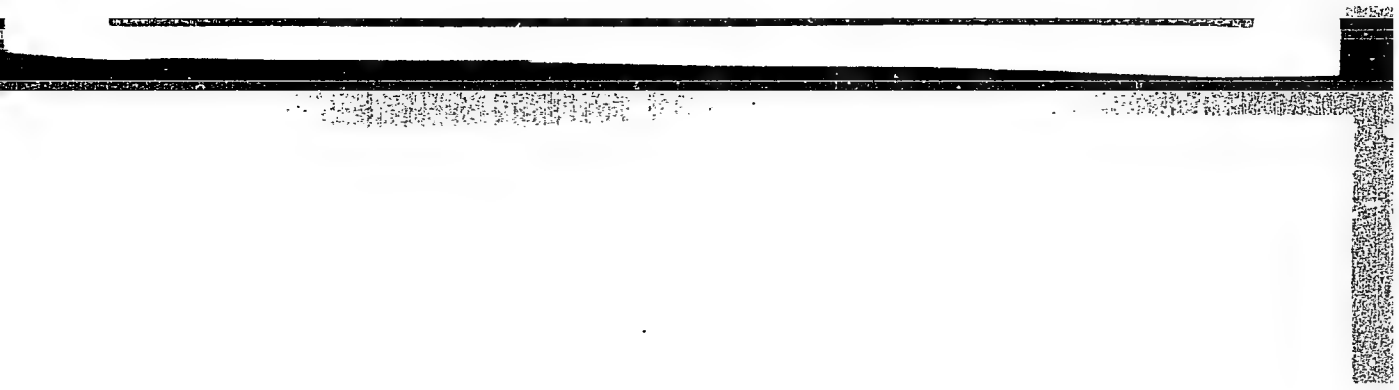




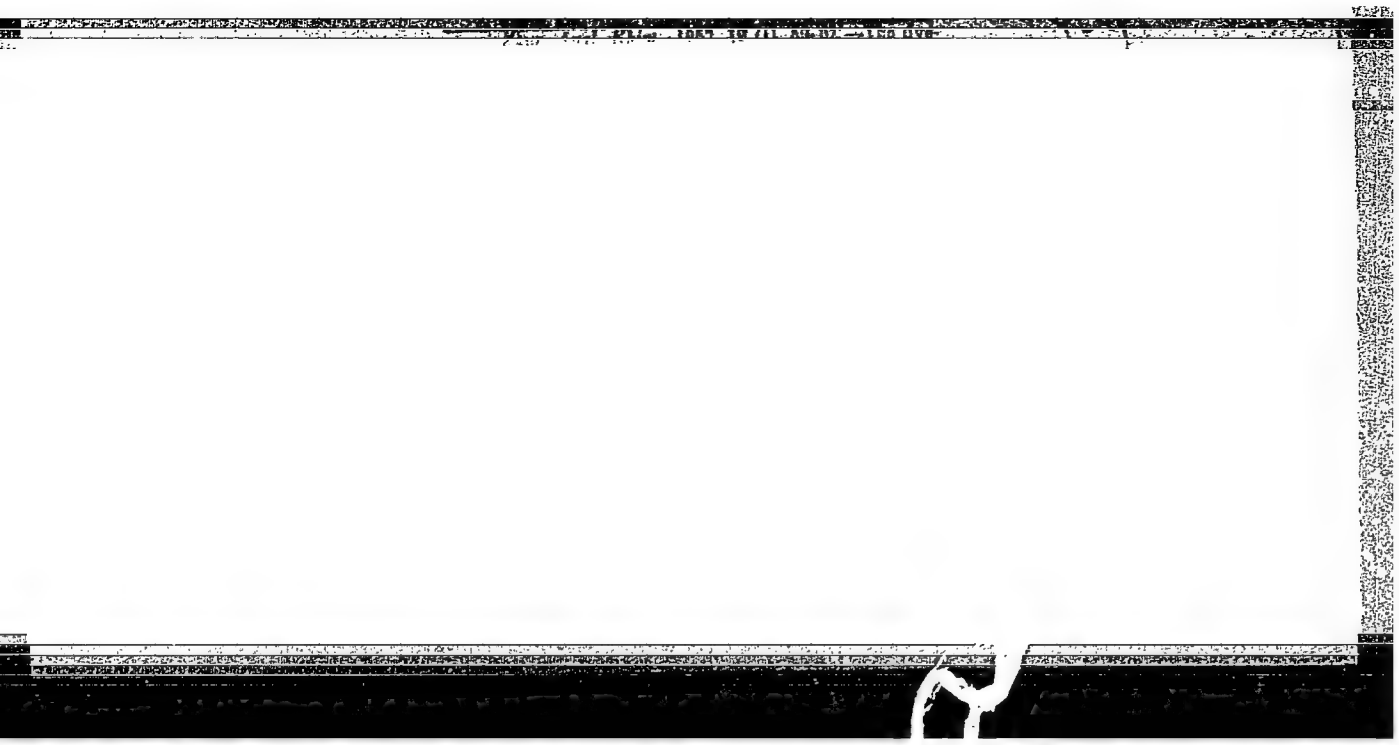
tion of radioisotopes. The reports of [illegible]
Soviet scientists about new methods of producing [illegible]
and gamma sources, as well as the report of [illegible]
method of extracting and concentrating cesium-137 [illegible]
great interest. K.K. Aglintsev and other Soviet scientists [illegible]
tured on the results of investigations of electronic [illegible]
in dosimetry of beta and gamma radiation. The [illegible]
Sonar and Loran together with the Soviet scientist [illegible]
lectured on new processes of ion diffusion in [illegible]
and the movability of ions depending on their charge. The
studies of V.S. Vavilov and other Soviet scientists [illegible]
tivity of nuclear radiation of semi-conducting [illegible]
of great importance for solving the problem of [illegible]
energy from nuclear radiation into electrical [illegible]
Soviet scientist V.I. Kusnetsov read a report on the [illegible]
organic reagents as catalysing precipitators for the [illegible]
of small quantities of admixtures, which is of [illegible]
tance for controlling the purity of semiconductors. [illegible]
scientist V.I. Spitsyn spoke on the use of [illegible]
tailing the structure and properties of [illegible]



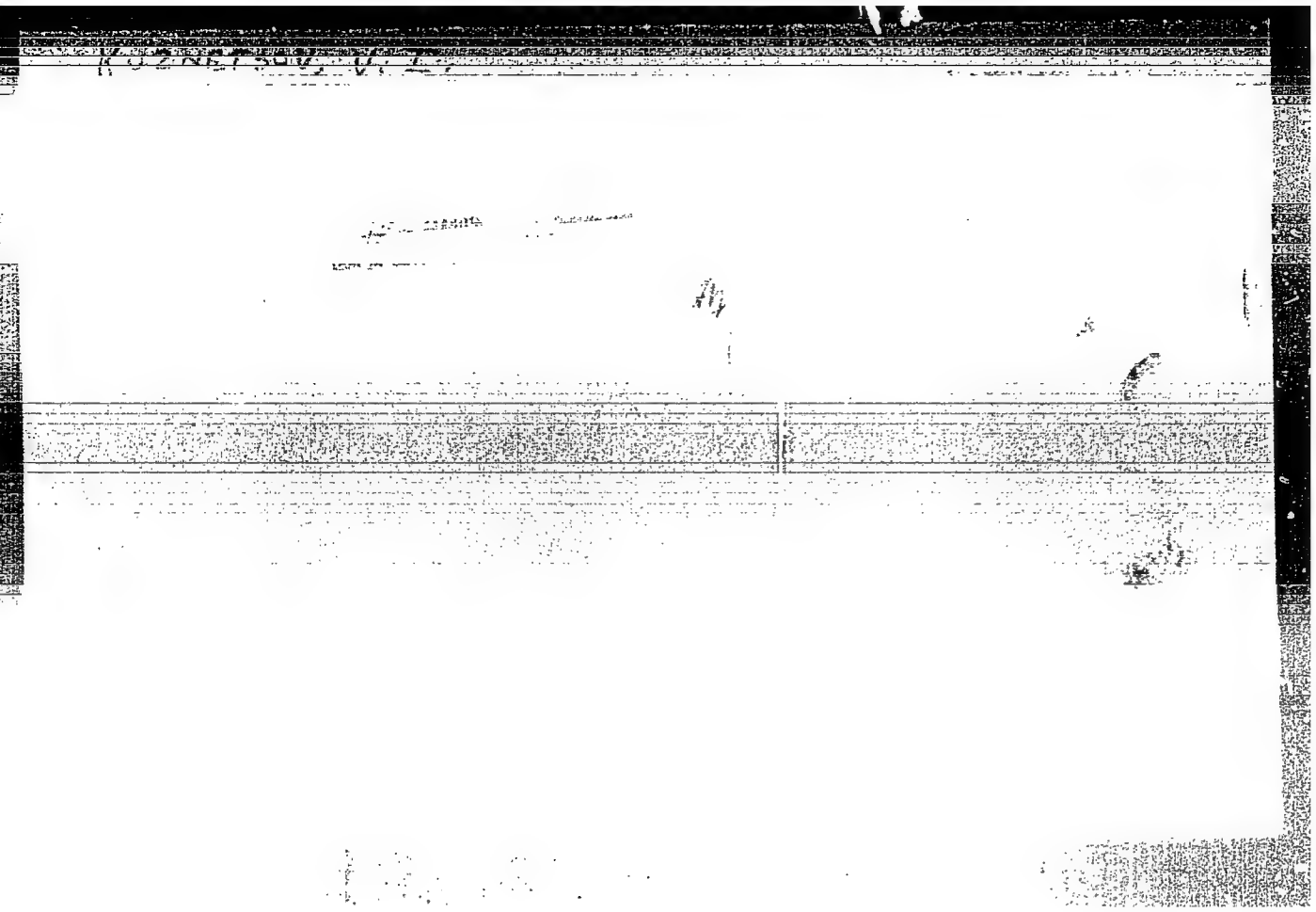
APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210008-1"



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210008-1"



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210008-1"



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210008-1"

AUTHORS: Kuznetsov, V. I., Professor, Doctor of Chemical Sciences, and Seryakova, I.V. 32-10-9/32

TITLE: Separation of Elements by Extraction With the Use of Easily Fusible Organic Substances (Ekstraktsionnoye razdeleniye elementov s primeneniyem legkoplavkikh organicheskikh veshchestv)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol 23, Nr 10, pp 1176-1180 (USSR)

ABSTRACT: In the present treatise it is stated that the method referred to in the title is one of the most applied ones. It is based upon the extraction of elements in the form of complex anions according to the principle of oxonium-compounds (3). This extraction takes place by the use of organic oxygen-containing solvents of concentrated solutions of acid and consists in the fact that the oxoniumcation is formed, at the interaction of which the oxonium salt is formed with the extracted anion. The second obvious kind of extraction on the basis of the ammonium-compound, which leads to the formation of ammonium salts in the case of extraction by amines, is registered as still too little investigated. A close examination of the other methods of extraction with dimethylaniline, quinoline, and pyridine has shown that they are equivalent to those described above. In the respective publications there are always again tests mentioned for

Card 1/3

carrying out the extraction on the principle of other processes, but the principle of fluid extraction solvents is usually applied again. The authors of the present report tried to carry out the extraction of the elements by easily fusible organic extraction solvents and mixtures of hard and liquid substances, according to the principles of oxonium- and ammonium compounds and were able to state that the applications in view of a rapid separation of the elements can give good results. The following example is given in this context: The extraction solvent was melted in a retort by immersing in hot water and the extraction was carried out subsequently. The extract hardens after cooling and the liquid part can be removed only by pouring off. This simplifies the process. The process of extraction of the iron (III) from hydrochlorid-acid solution by dimethylether of sebacic acid (melting temperature $\sim 30^{\circ}$) and by specially synthetized dimethylether of the racenic mixture of tartaric acid (43°) was described in the chapter entitled: Extraction by easily meltable organic extraction solvents. In the first case a satisfactory extraction at K = 130 of the iron chloride from HCl was achieved, whereas in the second case a poor result was obtained (at K = 0,1). An examination showed that in the case of acid ether contai-

ning oxide groups extraction of iron is much less than without this content. The reason for this was not explained. In the second case of extraction, according to the principle of ammonium-compound, the application of α - naphthylamine was found most suitable. In the chapter: Extraction by mixtures of hard and fluid organic substances, the following were specified as suitable ingredients. stearic acid, paraffin, "ceresit", benzoic acid, and naphtha. A table of the results obtained is given here. This kind of extraction is successfully applied with the separation of cobalt from copper, which, as is known, is difficult to be achieved by other methods. (The description of this process is given in the following). Amine acetate is used for the mixture with the mentioned substances.
There are 5 tables, and 12 references, 7 of which are Slavic.

ASSOCIATION: Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences, USSR (Institut geokhimii i analiticheskoy khimii imeni V.I. Vernadskogo, Akademiya nauk, SSSR).

AVAILABLE: Library of Congress
Card 3/3 1. Chemical elements-Separation 2. Organic compounds-Application

KUZNETSOV, V.I.

PA - 2456

AUTHOR KUZNYETSOV V.I. Dr.d.Chem.

TITLE The Prosepcts in the Development of organic structure analysis. (Pyerspyektivy razvitiya organicheskogo strukturnogo analiza. Russian.)

PERIODICAL Vestnik Akademii Nauk 1957, Vol 27, Nr 1, pp 13-22 (USSR)

Received: 5/1957 Reviewed: 5/1957

ABSTRACT In the preface to his theoretical text-book on organic structure analysis the author directs attention to the inadequate state of chemical analysis control in the principal branches of industry and research in the USSR, which is the cause of cases of poisoning by spoiled food, low-quality-production of chemicals, and which leads to unrational and costly methods of analysis. Lack of experience has lead to the opinion - according to the author - that every new analytic reaction that does not represent an analogy to reactions already known, is asribed to mere chance or to a special effort.

In the first chapter: On the prospects of the development of the structural analysis of organic compounds according to functional grouping, the author shows that in the field of organic analysis a great number of organic substances is used to react with the ions of various elements. It was established that only

CARD 1/3

The Prospects in the Development of organic structure analysis.

such reagents are suitable to react with certain elements as belong to special functional groups or show other particularities in their molecular structure. Vice-versa, the ions of these elements can be used as reagents to detect the characteristic properties of molecular structures and functional groups. The application of the salts of various elements is no new procedure, they offer, however, an unlimited range of possibilities, of which only a few examples are given:
Reactions with ferrichloride, with compounds of tungsten W^{VI} and titanium Ti^{IV}, reactions of phenoles and naphtoles with mercury nitrate, reactions of isomeric 1,2 aminonaphtol-disulphic acids with molybdate compounds. A special process makes it possible not only to obtain reactions producing colored substances, but also by employing colorimetric methods to obtain, the colorreactions based on masking complex formation. The chapter contains 2 tables and 2 illustrations.
The second chapter entitled: "The influence of structural properties on the analytic reactions of organic compounds" deals with the influence of radicals or of other peculiarities in the molecular structure on the behavior of the group of atoms with show reactivity within organic compounds. A table on ferrochloride-reactions of radicals of salycylic acid, and 3 illustrations are added.

PA - 2456

The Prospects in the Development of organic structure analysis.

In the third chapter processes for the determination of analytic reactions producing colored substances of organic compounds are given. The author discusses the reactions of heavy organic anions and cations, and refers to examples given in the monography by P. Pfeifer. He ends by advising the scientists of the USSR, to establish a specialized laboratory for research in the field of new analytic reactions. Chapter 3 contains 3 illustrations.

ASSOCIATION: not given
PRESENTED BY: -
SUBMITTED: -
AVAILABLE: Library of Congress

CARD 3/3

AUTHOR: KUZNETSOV,V.I.

TITLE: The Application of Organic Reagents in Analytical Chemistry. (Primyenyenye organicheskikh reagentov v analiticheskoy khimii, Russian)

PA - 2631

PERIODICAL: Vestnik Akademii Nauk SSSR, 1957, Vol 27, Nr 3, pp 122-125 (U.S.S.R.)

Received: 6 / 1957 Reviewed: 7 / 1957

ABSTRACT: This is the first All-Russian Conference to deal with this problem. It was pointed out that the success achieved in recent years by means of this process in the field of anorganic chemistry by far surpasses that achieved in organic chemistry. New theoretical bases for the investigation of new organic reagents are created for anorganic analysis, and already existing ones are improved. In connection with the utilization of organic reagents new trends in analytical chemistry such as complexiometry, ascorbinometry, etc. have been developed with success. Many new reagents and the compounds formed by them are carefully studied by means of all existing modern methods of research. There follows a short account of a number of special lectures dealing with this subject.

ASSOCIATION: Not given

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress

Card 1/1

KUZNETSOV V. I.
p. 2

PHASE I BOOK EXPLOITATION SOV/3850

SOV/9-M-8(11)

Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii imeni V. I. Vernadskogo. Komissiya po analiticheskoy khimii

Spektrofotometricheskiye i kolorimetricheskiye metody analiza (Spectrophotometric and Colorimetric Methods of Analysis) Moscow, 1958. 286 p. (Series: Its: Trudy, tom. 8 (11) Errata slip inserted. 3,000 copies printed.

Resp. Ed.: I. P. Alimarin, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: V. M. Peshkova; Tech. Ed.: N. I. Moskvicheva.

PURPOSE: The publication is intended for chemists, particularly analytical chemists and geochemists.

COVERAGE: This collection of 29 articles is published as Volume VIII (XI) of the Transactions of the Committee on Analytical Chemistry at the Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of

Card 1/6

Sciences USSR. The general subject of the volume is the investigation of spectrophotometric and colorimetric analysis. Individual articles on the following topics may deserve special attention: the present state of light absorption analysis, the sensitivity of the colorimetric methods of inorganic analysis, the basic variations of the kinetic method of analysis, spectrophotometric investigation of heteropolyacids of germanium, a new colorimetric method of determining small quantities of thallium, a fluorimetric method of determining uranium, spectro-photometric investigation of the behavior of oxidation-reduction indicators, a phasometric optical-acoustical method of gas analysis, and a description of an automatic spectrophotometric gas analyser. No personalities are mentioned. References are given at the end of each article.

TABLE OF CONTENTS:

KUZNETSOV, V. I.

5(2) PHASE I BOOK EXPLOITATION SOV/1727

Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii

Redkozemel'nyye elementy; polucheniye, analiz, primeneniye (Rare Earth Elements; Extraction, Analysis and Application) Moscow, Izd-vo AN SSSR, 1958. 331 p. 2,800 copies printed.

Resp. Ed.: D. I. Ryabchikov, Professor; Editorial Board: I. P. Alimarin, Corresponding Member, USSR Academy of Sciences, L. N. Zasovskiy, Doctor of Chemical Sciences, R. V. Engl'yarov, Candidate of Technical Sciences, V. I. Kuznetsov, Doctor of Chemical Sciences, M. M. Senyavin, Candidate of Chemical Sciences, and Yu. S. Sklyarenko, Candidate of Chemical Sciences; Eds. of Publishing House: B. N. Trifonov and T. G. Levi; Tech. Ed.: S. G. Markovich.

PURPOSE: This book is intended for scientists, chemists, teachers and students of higher educational institutions, chemical and industrial engineers, and other persons concerned with the extraction, preparation, use, or study of rare earth elements.

COVERAGE: This collection contains reports presented at the June 1956 Conference on Rare Earth Elements at the Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy of the Academy of Sciences USSR. The articles treat chemical methods of separating rare earth mixtures, methods of processing rare earth ores, ion exchange chromatography, chemical analysis, and some industrial applications of rare earths. Aside from contributing authors, the editors mention the following Soviet scientists, who are studying rare earth elements, rare earth deposits, extraction methods, and the preparation of oxides and salts: Martynov, Mal'nikov, Khrushchev, Melikov, Pisarzhevskiy, Chernyak, Tananaev, Beloussov, Zhukov and especially, S. A. Orlov, who first obtained the majority of rare earth elements in the pure state, separated many complex molecular compounds of these elements, and determined their specific properties. References are given at the end of each article.

TABLE OF CONTENTS:

Card 8/11

21(3) [illegible] I [illegible] EXPLOITATION SOV/[illegible]

Kuz'netsov, V.I.

Vsesoyuznaya [illegible] konferentsiya po primeneniyu ra[illegible] [illegible] izotopov i izlucheniy v [illegible]-stve i nauke. Moscow, 1957.

Trudy... [illegible] i priborostroyeniye (Transactions of the All-[illegible] Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science; Machine and Instrument Manufacturing) Moscow, Izd-vo AN SSSR, 1958. 358 p. 4,500 copies printed.

Sponsoring Agencies: [illegible]. Glavnoye upravleniye po ispol'zovaniyu atomnoy energii, and Akademiya nauk SSSR.

Editorial Board of Set: V.I. Dikushin, Academician (Resp. Ed.), N.N. Shumilovskiy (Deputy Resp. Ed.), Yu. S. Zaslavskiy (Deputy Resp. Ed.), L.K. Tatochenko, B.I. Verkhovskiy, S.T. Nazarov, L.I. Petrenko and N.S. Zalevinskaya (Secretary).

Ed. of Publishing House: P.N. Belyanin; Tech. Ed.: T.P. Poleneva.

PURPOSE: This book is intended for specialists in the field of machine and instrument manufacture who use radioactive isotopes in the study of materials and processes.

COVERAGE: This collection of papers covers a very wide field of the utilization of tracer methods in industrial research and control techniques. The topic of this volume is the use of radioisotopes in the machine-and instrument-manufacturing industry. The individual papers discuss the applications of radioisotope techniques in the study of metals and alloys, problems of friction and lubrication, metal cutting, engine performance, and defects in metals. Several papers are devoted to the use of radioisotopes in the automation of industrial processes, recording and measuring devices, quality control, flowmeters, level gauges, safety devices, radiation counters, etc. These papers represent contributions of various Soviet institutes and laboratories. They were published as Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science, April 4-12, 1957. No personalities are mentioned. References are given at the end of most of the papers.

KUZNET[redacted], V.I.
SOV

5(2); 21(5) PHASE I BOOK EXPLOITATION SOV/1900

Akademiya nauk SSSR. Komissiya po analiticheskoy khimii

Primeneniye radioaktivnykh izotopov v analiticheskoy khimii (Use of Radioactive Isotopes in Analytical Chemistry) Moscow, Izd-vo AN SSSR, 1958. 366 p. (Series: Its: Trudy, t. 9 (12)) Errata slip inserted. 3,000 copies printed.

Resp. Ed.: I.P. Alimarin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House A.N. Yermakov; Tech. Ed.: T.V. Polyakova.

PURPOSE: The book is intended for chemists and chemical engineers concerned with work in analytical chemistry.

COVERAGE: The book is a collection of the principal papers presented in Moscow at the Second Conference on the Use of Radioactive Isotopes. The problems discussed at the Conference included coprecipitation, aging, and solubility of precipitates, determination of the instability constants

Card 1/10

of complex compounds, separation of rare earth metals, and ion-exchange chromatography. No personalities are mentioned. There are 351 references, 175 of which are Soviet, 33 German, 19 French, 8 Swedish, 2 Hungarian, and 2 Czech.

TABLE OF CONTENTS:

Use of Radioactive Isotopes (Cont.) SOV/1900

Card 3/10

(10)

KUZNETSOV, V. I.; MITROFANOVA, Ye. V.

"Chemical Control Method In the Separation of Rare Earth Elements of the Yttrium Subgroup."

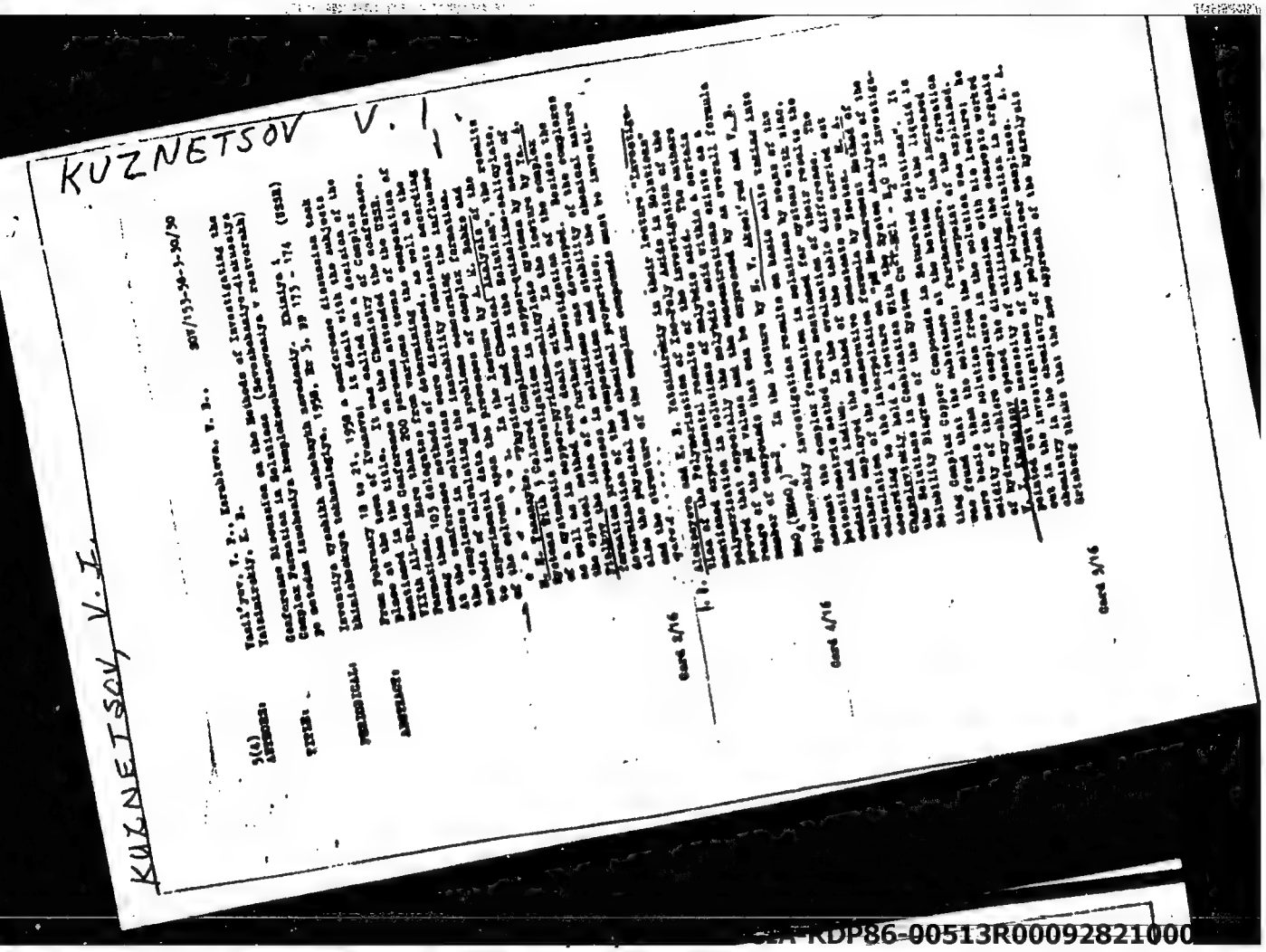
Rare Earth Elements (Extraction, Analysis, Use), Published by the Institute of Geochemistry and Analytical Chemistry Imeni V. I. Vernadskiy, 1958, Moscow.

(Institute of Geochemistry and Analytical Chemistry Im. V. I. Vernadskiy of the USSR Academy of Sciences), p. 192-198.

KUZNETSOV, V. I., and AKIMOV, T. G.

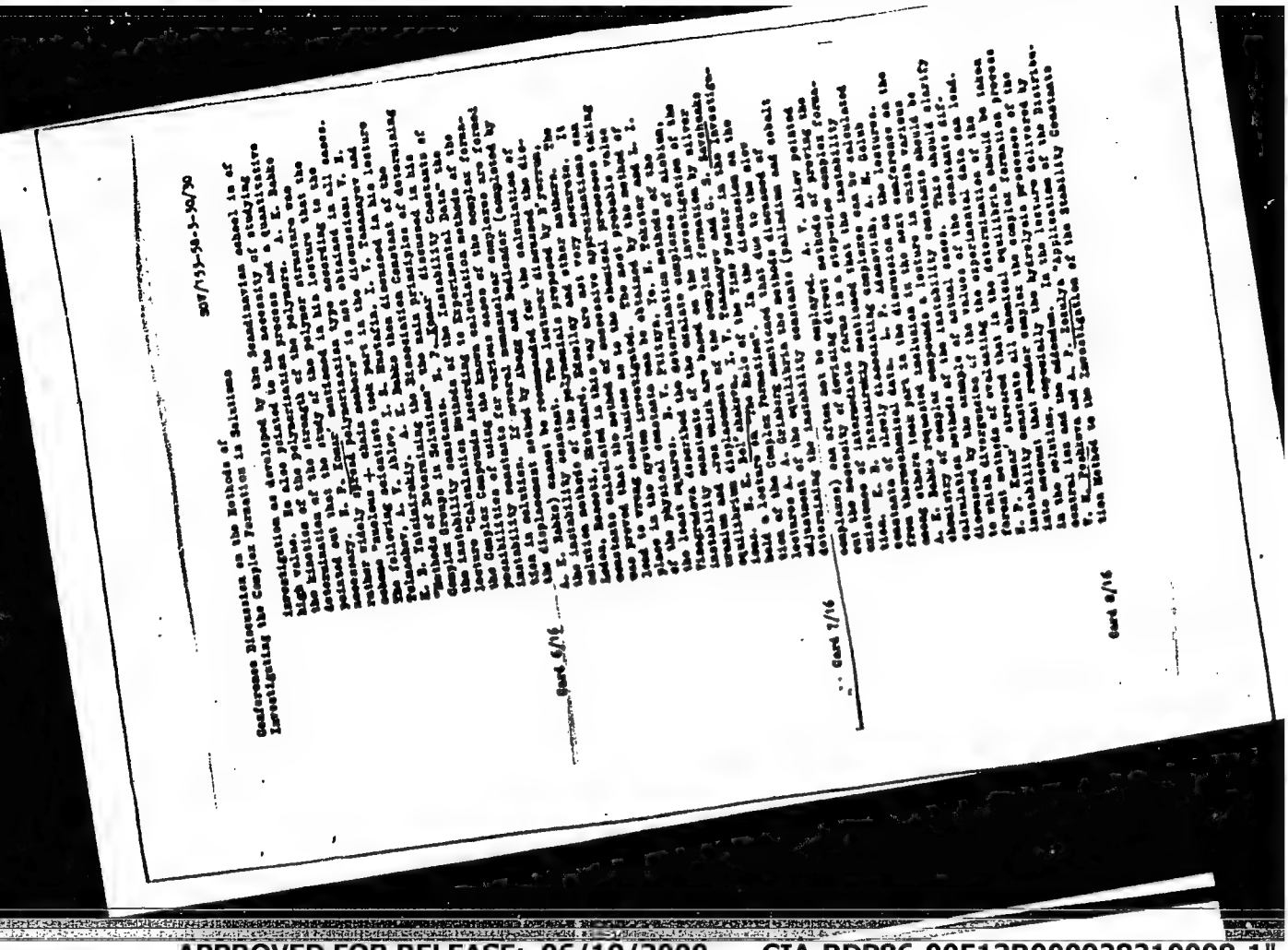
"Method for precipitating uranium."

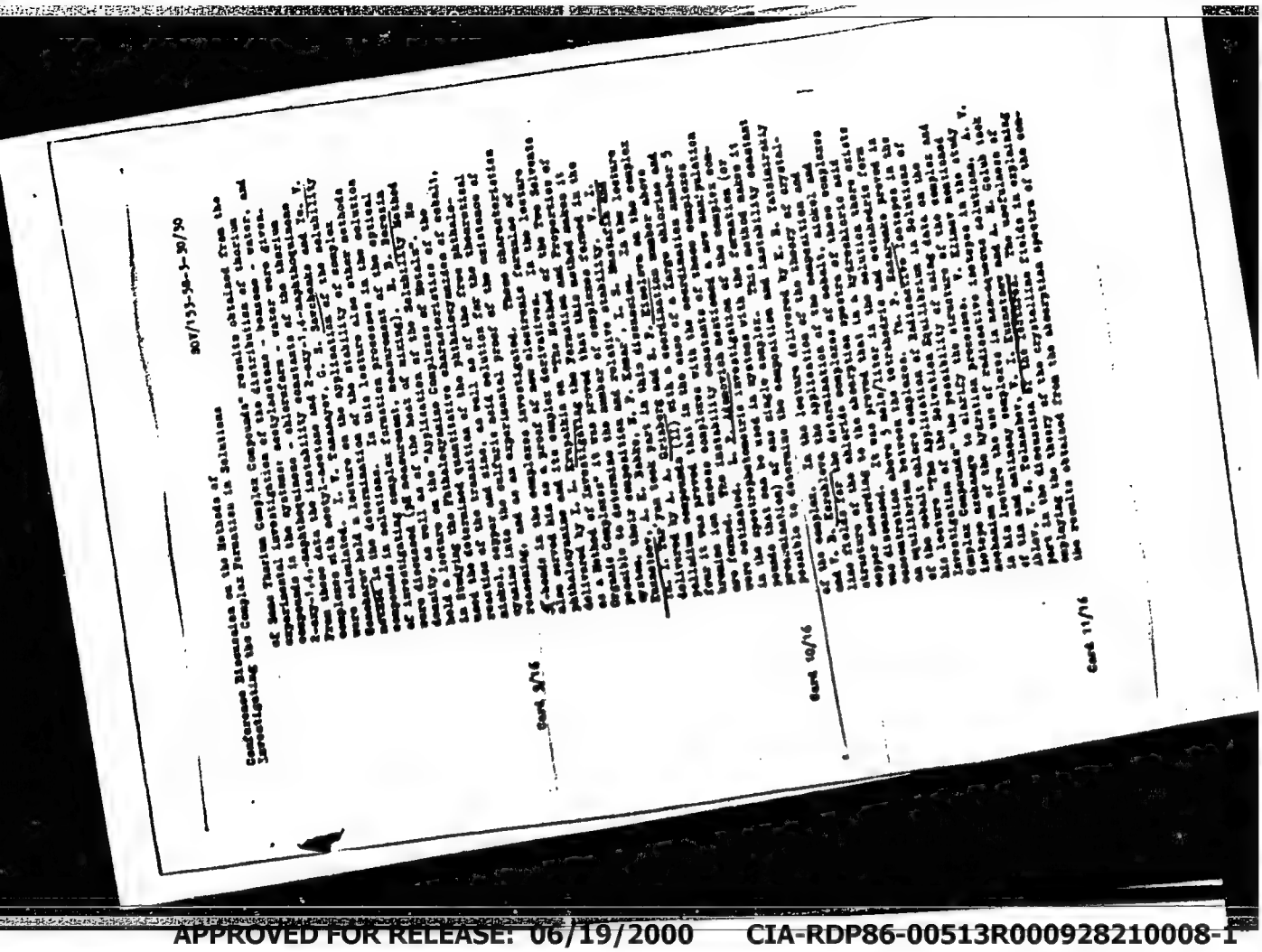
report presented at The Use of Radioactive Isotopes in Analytical Chemistry, Conference in Moscow, 2-4 Dec 1957
Vestnik Ak Nauk SSSR, 1958, No. 2, (author Rodin, S. S.)

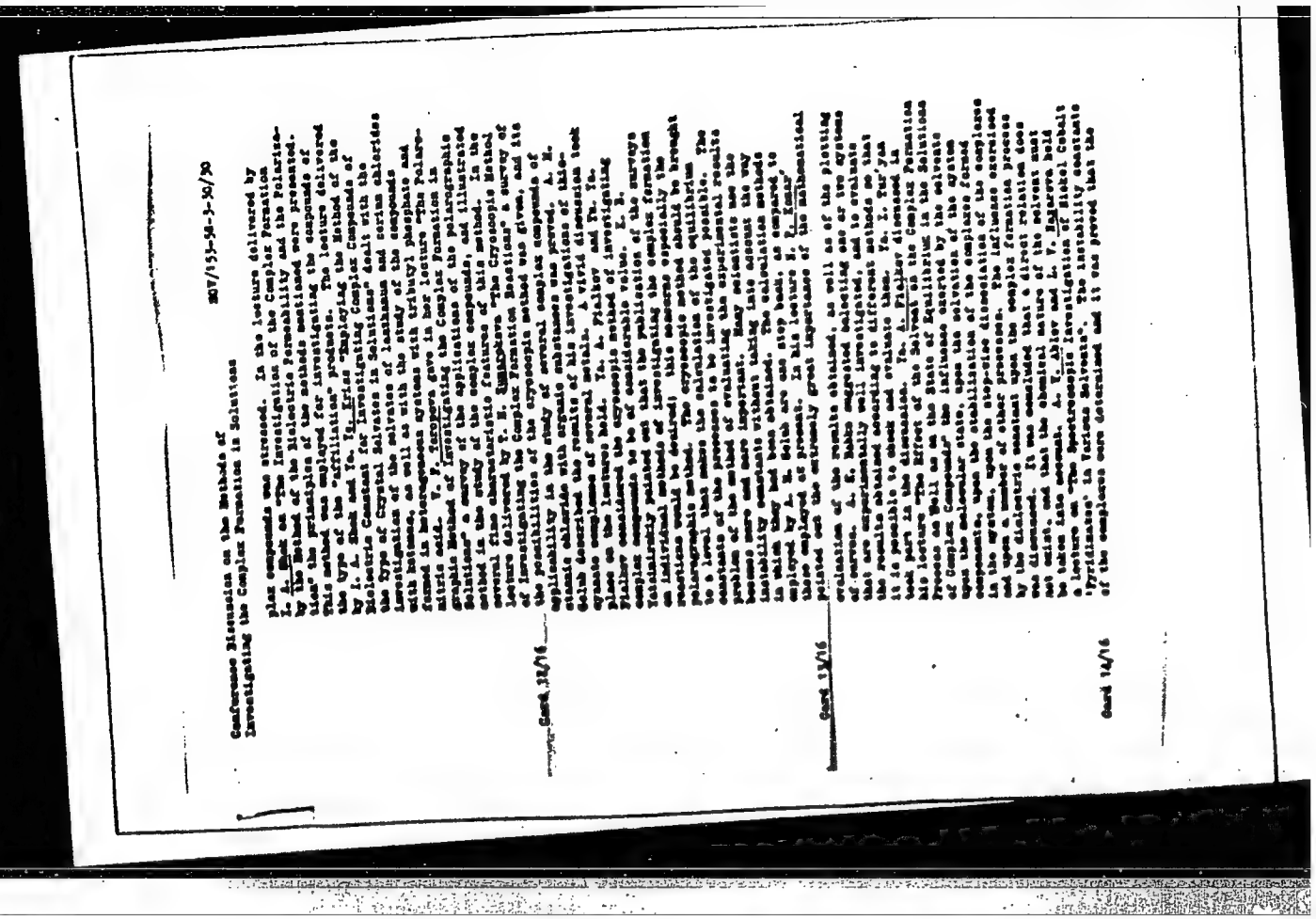


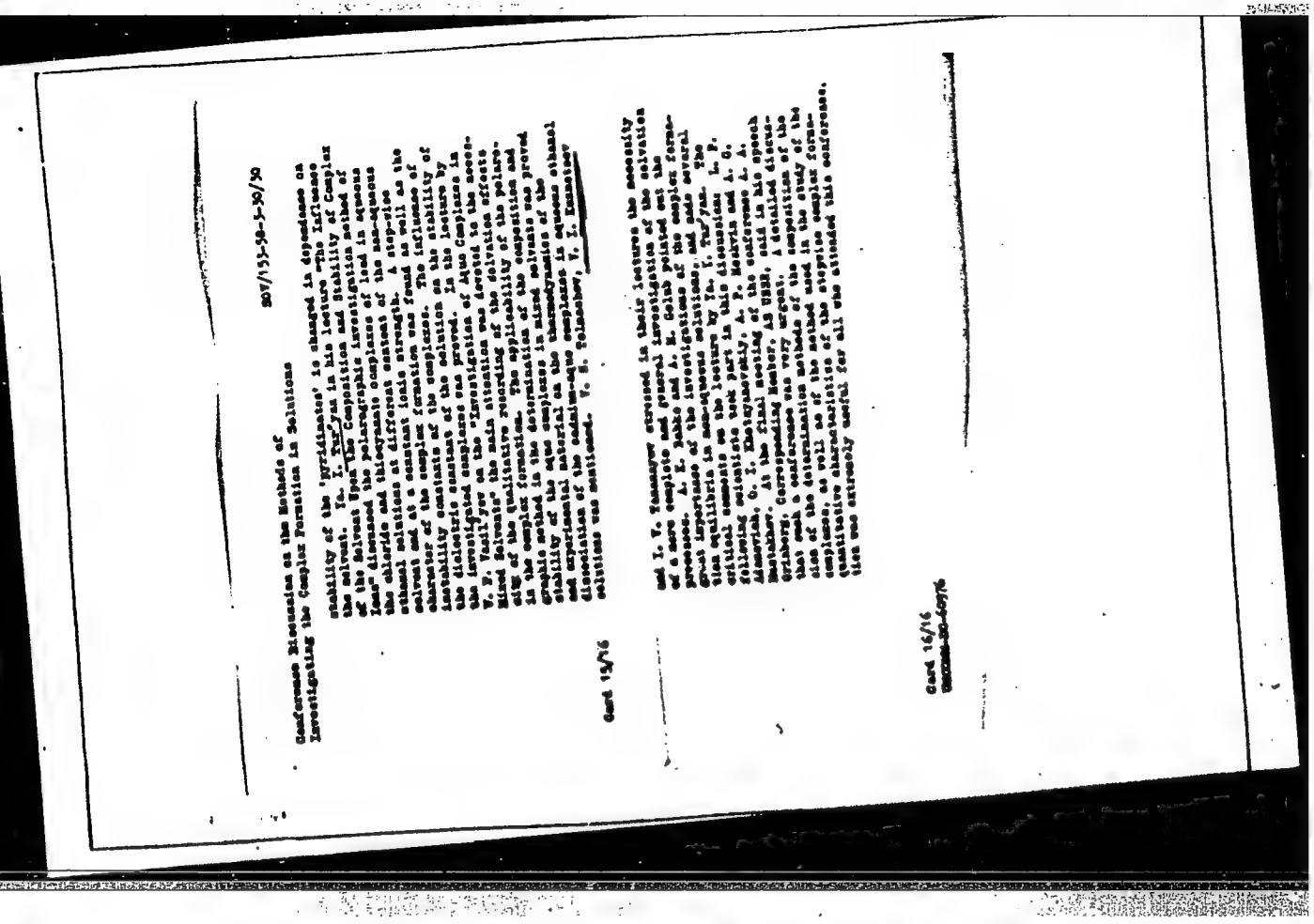
KUZNETSOV V. I.

KUZNETSOV, V. I.









KUZNETSOV, V.I.; LEVIN, I.S.

Colorimetric determination of indium. Izv. Sib.otd. AN SSSR no.7: 131-132 '58. (MIRA 11:9)

1.Institut geokhimii i analiticheskoy khimii imeni V.I. Vernadskogo AN SSSR i Zapadno-Sibirskiy filial AN SSSR.
(Indium) (Colorimetry)

KUZNETSOV, V.I.

Increase in the sensitivity of colorimetric inorganic analysis and color reactions. Trudy kom. anal. khim. 8:52-74 '58.
(MIRA 11:8)

1. Institut geokhimii i analiticheskoy khimii im. V.I. Vernadskogo Akademii nauk SSSR.
(Colorimetry)

KUZNETSOV, V.I.; MYASOYEDOVA, G.V.

Organic coprecipitants. Part 9: Coprecipitation of rare earth elements. Trudy kom.anal.khim. 9:76-88 '58. (MIRA 11:11)
(Rare earths) (Precipitation)

KUZNETSOV, V.I.; MYASOYEDOVA, G.V.

Organic coprecipitants. Part 10: Coprecipitation of molybdenum.
Trudy kom.anal.khim. 9:89-97 '58. (MIRA 11:11)
(Molybdenum) (Precipitation)

AUTHORS: Kuznetsov, V. I., Akimova, A. A. 75-1-12/26

TITLE: Organic Coprecipitants (Organicheskiye soosaditeli) Communication 8. The Coprecipitation of Uranium during its Determination in Sea Water (Soobshcheniye 8. Soosazhdeniye urana pri yego opredelenii v morskoy vode)

PERIODICAL: Zhurnal Analiticheskoy Khimii, 1958, Vol. 13, Nr 1, pp. 79-82 (USSR)

ABSTRACT: The present paper describes the elimination of uranium from sea water with simultaneous separation from the salts dissolved in sea water. A number of elements which are present in sea water in very low concentrations is precipitated together with uranium. The uranium content of sea water is so low that its direct determination is neither possible in water nor in a dry state after the evaporation of the water. There are different methods for previously enriching uranium. Besides several anorganic precipitants (references 1-4) organic co-precipitants are especially suitable for the enrichment of uranium. At an excess of thiocyanate ions uranium in acid solutions forms a weakly dissociated complex anion

Card 1/4

$UO_2(SCN)_3^-$ and can therefore be precipitated together with the precipitates of not easily soluble thiocyanates of heavy organic cations. Such organic cations are, for example, the dyes methyl violet, crystal violet, methylene blue, rhodamines, saffranines and many others (refs. 5-8). The precipitation of uranium as a complex thiocyanate anion even takes place quantitatively from very much diluted uranium solutions. This fact was proved by radiometric measurements with the aid of the uranium isotope U^{233} (α-emitter, half-life period $1{,}6.10^5$ years). The α-counter used permitted the investigation of the precipitation of uranium up to uranium solutions with a dilution of $1:10^{10}$. In the case of this dilution the precipitation was still quantitative. The decomposition of the organic precipitates took place in a muffle furnace at 500--600°C. The uranium is then determined in the residues. The precipitate of methyl-violet thiocyanate so effectively co--precipitates uranium that this method was employed for the purification of the reagents used for determination from uranium-traces. In sea water which usually has a p_H-value of

Organic Coprecipitants.
Communication 8. The Coprecipitation of Uranium during its Determination in Sea Water

75-1-12/26

7 to 8 uranium mainly occurs in form of colloidal solutions. However, for the elimination as complex thiocyanate anion it must be ionized. The formation of a true solution can simply be attained by acidification with hydrochloric acid. The determination of the enriched uranium takes place radiometrically or by means of the fluorescence method in a sodium-fluoride pearl. Together with uranium all elements are eliminated which can form complex thiocyanate-anions or insoluble thiocyanates, as for example mercury, silver, bismuth, zinc, cadmium, molybdenum, iron(III) and some other elements. As the content of sea water in these elements is extremely low, their co-precipitation does not render the subsequent uranium determination difficult. The co-precipitation of a number of other elements can be effectively prevented by performing the precipitation in the presence of complexone III. Pollutions by iron can be prevented by the use of purer methyl violet or by conversion of iron into the second stage (e. g. by means of ascorbic acid). The experimental conditions of the elaborated method are described in detail. There are

Card 3/4

Organic Coprecipitants. 75-1-12/26
Communication 8. The Coprecipitation of Uranium during its Determination in Sea Water

2 tables and 10 references, 3 of which are Slavic.

ASSOCIATION: Moscow Institute for Geochemistry and Analytical Chemistry imeni V.I. Vernadskiy AS USSR Moscow (Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moskva)

SUBMITTED: January 2, 1957

AVAILABLE: Library of Congress

1. Uranium - Determination 2. Uranium - Precipitation

Card 4/4

AUTHOR: Kuznetsov, V. I. 75-13-2-12/27

TITLE: A Color Reaction for Uranium With the Reagent Arsenazo (Tsvetnaya reaktsiya na uran s reagentom arsenazo)

PERIODICAL: Zhurnal Analiticheskoy Khimii, 1958, Vol. 13, Nr 2, pp. 220-224 (USSR)

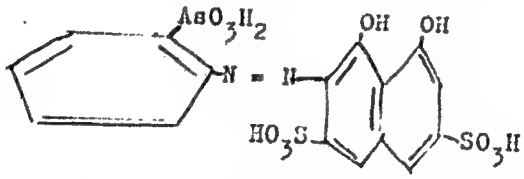
ABSTRACT: Four-valent and six-valent uranium because of the chromophoric atom grouping of their ions gives a series of color reactions, (Reference 2). In publications a series of such reactions of the uranyl ion with uncolored reagents is described (References 3-25). Color reactions, which are based upon the chromophoric effect of elements are relatively little sensitive (Reference 27). Methods, which are based upon color reactions with colored organic reagents, have a higher sensitivity. In such reactions the color change is caused by a change in the ion structure of the colored reagent (Reference 28). Because the proper color of the concerned reagent is very intensive, such color reactions are very sensitive. In publications a number of such color reactions with uranium is described (References 6,29-33).

Card 1/4

A Color Reaction for Uranium With the Reagent Arsenazo

75-13-2-12/27

The reaction with the already before described reagent Arsenazo also being of this type (Uranon I), benzene-2-arsonic acid-<1-azo-7>-1,8-dihydroxy-naphtalene-3,6-disulfonic acid, which gives with quadrivalent as well as with hexavalent uranium highly sensitive and contrasting color reactions (References 34,35).



Arsenazo can also serve for the photometric determination of a number of other elements (References 34-41). In this work the color reaction of Arsenazo with hexovalent and quadrivalent uranium is described. The sodium salt of this reagent is a dark-brown crystalline powder, which in water is readily soluble with a pink color. This color is not

Card 2/4

changed by acidifying, in the alkaline domain it changes into raspberry red. Strong oxidizing agents (Cl_2, Br_2, MnO_4^-, ClO^-) and strong reducing agents (Sn(II), Ti(III), $Na_2S_2O_4$) decolorize and decompose the reagent. H_2O_2 does not act upon the reagent in the cold. In the presence of hexavalent uranium at a p_H~4.5-5.5 the color of the reagent changes from pink to blue, in the presence of quadrivalent uranium in mineral acid solution it changes to violet. For the detection of hexavalent uranium the reagent and urotropin is added to the weakly acid test solution. The maximum dilution for this uranium determination is $1:5.10^6$. In case of addition of hydrogen peroxide the solor instantaneously changes to pink. This fact serves as control reaction. If NaF, $Na_2S_2O_3$, or salicylates are added to the screened indicator U(IV) can also be detected in case of presence of the rare earths Fe, Al, Th, Zr, Cu and Be. Quadrivalent uranium

A Color Reaction for Uranium With the Reagent Arsenazo

75-13-2-12/27

can be detected directly in mineral acid solution in case of presence of high quantities of U(VI), rare earths, V(VI), Be, Al, Fe(II), Cu, Mg and of a number of other elements. Cations (Fe(III), Zr, Ti, Th) and anions (phosphates, arsenates), which disturb the reaction, can be separated by precipitation with meta-stannic acid. Meta-stannic acid precipitates in the dilution of a solution of $SnCl_4$. In this paper the performance of the qualitative detection reaction of U(VI) and U(IV) in case of absence and of presence of disturbing foreign ions, and the detection of U(VI) and U(IV) in minerals is described exactly. There are 44 references, 2o of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. Vernadskogo AN SSSR, Moskva (Moscow, Institute for Geochemistry and Analytic Chemistry AS USSR imeni Vernadskiy)

SUBMITTED: November 25, 1956

1. Uranium--Color 2. Uranium--Analysis 3. Arsenazo--Performance

Card 4/4

AUTHORS: Kuznetsov, V. I., Bankovskiy, Yu. A., Ivevin'sh, A. P. 75-13-3-7/27

TITLE: The Analytical Use of 8-Mercaptoquinoline (Thiooxine) and Its Derivatives (Analiticheskoye primeneniye 8-merkaptokhinolina (tiooksina) i yego proizvodnykh)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 3, pp 267-273 (USSR)

ABSTRACT: 8-mercaptoquinoline has been known for a long time (Ref 1), but hitherto has not been met with any interest in analytical chemistry (Ref 2). The reason for this was the difficulty of synthesis and the low stability of this compound and its derivatives which rapidly oxidize at the air. One of the authors of the present paper worked out a synthesis of 8-mercaptoquinoline (Ref 3) whereby it became easily accessible. Moreover it was found that the salt of hydrochloric acid is resistant to atmospheric oxygen and that it can therefore serve for storing 8-mercaptoquinoline. The properties of anhydrous 8-mercaptoquinoline and of the following derivatives are described in the present paper: the dihydrate, the hydrochloride, the sodium salt and the disulfide which is produced from 8-mercaptoquinoline by oxidation. The

Card 1/4

authors also investigated the analytical properties and reactions of 8-mercaptoquinoline. This new reagent precipitates the elements of the H_2S-group and of the ammonium sulfide group. Some elements which beside the Me-S bond also yield a stable bond with the nitrogen of the quinoline ring are even precipitated from highly acid solutions. The qualitative reactions of proof based on this fact are distinguished by a high sensitivity. A number of elements are liberated as compounds of certain compositions which can be weighed out as such. The 8-mercaptoquinolinates of Cu, Zn, Hg_2^{++}, Tl, Sn(II), Pb, As(III), As(V), Sb(III), Bi, V, Mo, Mn, Fe, Co, Ni, Pd are well soluble in organic solvents (especially in bromobenzene, bromoform, benzene and toluene) and can be extracted, whereby the separation of small amounts of one element from very large amounts of other elements which do not react with the reagent is made possible. The solutions of some 8-mercaptoquinolinates in organic solvents are intensively colored and can be photometrically determined. The sensivity of these reactions is higher than in the corresponding 8-hydroxyquinolinates and approaches the sensitivity of dithi-

The Analytical Use of 8-Mercaptoquinoline (Thiooxine) and Its Derivaives

zonates. As compared to dithizone, 8-mercaptoquinoline has the advantage of a higher specificity. The use of the new reagent also permits the titrimetric determination of a number of elements, as 8-mercaptoquinoline is by oxidizing agents easily converted to the disulfide. A disadvantage of the reagent is its easy oxidizability. In acid solutions, however, the oxidation by atmospheric oxygen takes place so slowly that it does not disturb the analysis. As 8-mercaptoquinoline is also resistant to very strong reducing agents, elements being present in their lowest stages of valence (Mo, W, etc.) can be complexly bound by it, which is impossible with dithizone. As compared to thionalide, 8-mercaptoquinoline possesses the advantage that it precipitates a number of elements even from very highly acid solutions. In subsequent communications the determination of different elements by means of the new reagent shall be individually described. There are 3 figures, 1 table, and 14 references, 6 of which are Soviet.

Card 3/4

The Analytical Use of 8-Mercaptoquinoline (Thiooxine) and Its Derivatives 75-13-3-1/27

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V.I. Vernadskogo AN SSSR i Institut khimii AN Latviyskoy SSR (Institute of Geochemistry and Analytical Chemistry imeni V.I. Vernadskiy AS USSR and Institute of Chemistry, AS Latvian SSR)

SUBMITTED: March 28, 1957

1. Quinolines--Applications

Card 4/4

AUTHORS: Kuznetsov, V. I., Loginova, L. G., Myasoyedova, G. V. SOV/75-13-4-14/29

TITLE: Organic Co-Precipitants (Organicheskiye soosaditeli). Communication 9: The Concentration and Spectrographic Determination of Molybdenum in Natural Waters (Soobshcheniye 9. Kontsentrirovaniye i spektral'noye opredeleniye molibdena v prirodnykh vodakh)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol. 13, Nr 4, pp. 453-456 (USSR)

ABSTRACT: In natural waters flowing through the area of an ore deposit and containing up to 1-2g/l minerals the content of molybdenum usually does not exceed 10^{-7} - 10^{-6} g/l; in special cases it may rise to 10^{-3} - 10^{-4} g/l (Ref 1). As the content of molybdenum and other trace elements in natural waters is usually below the sensitivity of spectrographic methods, these elements must first be concentrated. This concentration may be realized by the evaporation of water or by the extraction and co-precipitation of inorganic and organic co-precipitation reagents. In the methods described in publications (Refs 2-5) for the quan-

Card 1/4

titative determination of molybdenum in natural waters the molybdenum is determined photometrically after the concentration. A method for the spectrographic determination of molybdenum in the dry residue of natural waters (Ref 6) makes possible the determination of 2.10^{-4}% Mo with an error of $\pm$10%. An important disadvantage of this method is the rapid decrease of the sensitivity with an increasing mineral content of the water. At a content of 5-10g/l this method is already hardly suited for this purpose. By the concentration of molybdenum this disadvantage may, however, be removed. The co-precipitation of molybdenum with the tannate of methyl violet (Ref 7) is well suited for the concentration. In 0,2 n hydrochloric acid solution molybdenum is in this way qualitatively co-precipitated, while Ca, Mg, Na, K, and other elements forming the main part of the mineral content of the water are not carried over by this precipitate. The concentration of molybdenum with organic co-precipitants at the same time removes the influence exerted on the spectrographic determination by the mineral content of the natural waters. The authors investigated the suita-

bility of this method of concentration and they designed a working instruction for the concentration of molybdenum in natural waters by means of the tannate of methyl violet and for the subsequent spectral analytical determination of molybdenum. Per 100 ml of a 0,2 n hydrochloric acid solution 5 ml of a 2% solution of methyl violet and 2,5 ml of a 2% tannin solution are added. The precipitate is filtered off and after the addition of 30 mg of a "carrier" consisting of anhydrous Na_2SO_4, $CaSO_4$, and $MgSO_4$ at temperatures not exceeding 500° they are annealed. The molybdenum is spectrographically determined in the residue. When using an a.c. carbon arc as excitor of the spectrum, and when measuring the absolute intensity of the most sensitive line of molybdenum (Mo 1R at 3132,6 Å) this way amounts of from 0,3 to 27μ of molybdenum may be determined with an error of ±12%. This method makes it possible to determine 0,3μ molybdenum in 1 l water of any mineral content. The spectra are photographed by a quartz spectrograph of the type ISP-22, the blackening of the analytical lines of molybdenum and of the

Organic Co-Precipitants. Communication 9: The Concentration and Spectrographic Determination of Molybdenum in Natural Waters SOV/75-13-4-14/29

carrier are measured by a microphotometer of the type MF-2. The working instructions for the concentration and determination of molybdenum in natural waters are given in detail. There are 1 figure, 2 tables, and 7 references, which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR i Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeologii i inzhenernoy geologii, Moskva (Moscow, Institute for Geochemistry and Analytical Chemistry, AS USSR, imeni V. I. Vernadskiy and All Union Scientific Research Institute for Hydrogeology and Geological Engineering)

SUBMITTED: February 9, 1957

1. Molybdenum--Determination 2. Molybdenum--Precipitation
3. Water--Analysis 4. Spectrographic analysis--Applications
5. Methyl violet--Precipitation

Card 4/4

SOV/32-24-9-3/53

AUTHORS: Kuznetsov, V. I., Budanova, L. M., Nenasheva, L. A.

TITLE: The Photometric Determination of Magnesium With the Reagent "Fenazo" (Fotometricheskoye opredeleniye magniya s reagentom fenazo)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 9, pp 1053-1056 (USSR)

ABSTRACT: In the present paper, the application of the new reagent 3,3'-dinitro-4,4'-bis(4-oxy-azobenzene)-biphenyl, called "fenazo", to magnesium determination is investigated. The production of this reagent, which constitutes a dark brown, water-insoluble powder, has been taken up by the zavod reaktivov im. Voykova (works for reagents imeni Voykov). Several advantages of "fenazo" over titanium yellow (and other reagents) in analyses are specified. Thus, for instance, work can be carried out at temperatures up to 35°. Colorimetric determinations can be made in the presence of H_2O_2 (up to 10%) and of NaClO (up to 15%). Magnesium can be determined in Mg : Ti ratios up to 1 : 2000. The low effect of silicon on

Card 1/2

The Photometric Determination of Magnesium With the Reagent "Fenazo" SOV/32-24-9-3/53

"fenazo" facilitates the magnesium determinations in aluminium alloys, which may contain up to 15% silicon. Tables are given for four reagents (fenazo, titanium yellow, magnezone I, and caustic soda), which show "fenazo" to be twice as sensitive as titanium yellow. The importance of the "visibility" of analytical precipitations for the sensitivity of the reaction has already been mentioned by F. Faygl' (Ref 5). The method used for the determination of sensitivity is described, as is the analytical procedure for titanium alloys and aluminium alloys. There are 1 figure, 4 tables, and 12 references, 8 of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo Akademii nauk SSSR (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy at the AS USSR)

Card 2/2

5(2)

AUTHOR: Kuznetsov, V. I.

SOV/32-24-11-14/37

TITLE: Concerning a Rational Complement of Analytical Methods (O ratsional'nom assortimente analiticheskikh metodik)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 11, pp 1358 - 1366 (USSR)

ABSTRACT: An attempt is made to rationalize and systematize investigations in the field of analytical chemistry, and in doing so several important questions are explained. Among the most important properties of a method of determination are the selectivity and sensitivity of the reaction used. A rational complement of reagents must take account of the various reactivities of all the ions involved. For example, only the tin determination which is based on the oxidation $Sn^{2+} \longrightarrow Sn^{4+}$ is often used with no consideration of the tendency of the Sn to form volatile hydrides (Ref 4) in aqueous solution. Few elements undergo this reaction, and a method based on a reaction similar to that of Marsh and Gutzeit (Guttsayt) has not yet been worked out. A

Card 1/2

considerable improvement in the selectivity of reagents can be achieved by the "method of two reagents". In this case it is important that the reagents used in the previous separation and in the final determination have differing selectivities. Thus, for example, tin can be first separated as the tetrabromide and then determined with cupferron (Ref 10). In order to avoid parallel research work from being done it is necessary to coordinate the various investigations. This could be achieved through the analiticheskaya sektsiya Vsesoyuznogo khimicheskogo obshchestva im.Mendeleyeva (Analytical Section of the All-Union Chemical Society imeni Mendeleyev). Clarifying the relationship between organic reagents and the various analytical determination could lead to the production of new reagents. Several tables are given. There are 4 tables and 17 references, 7 of which are Soviet.

AUTHORS: Kuznetsov, V. I., Malofeyeva, G. I., Nikol'skaya, I. V. SOV/32-24-10-2/70

TITLE: The Method of Acid Decomposition in the Determination of Thorium and Uranium in Sandstone (Metod kislotnogo razlozheniya pri opredelenii toriya i urana v peschanikakh)

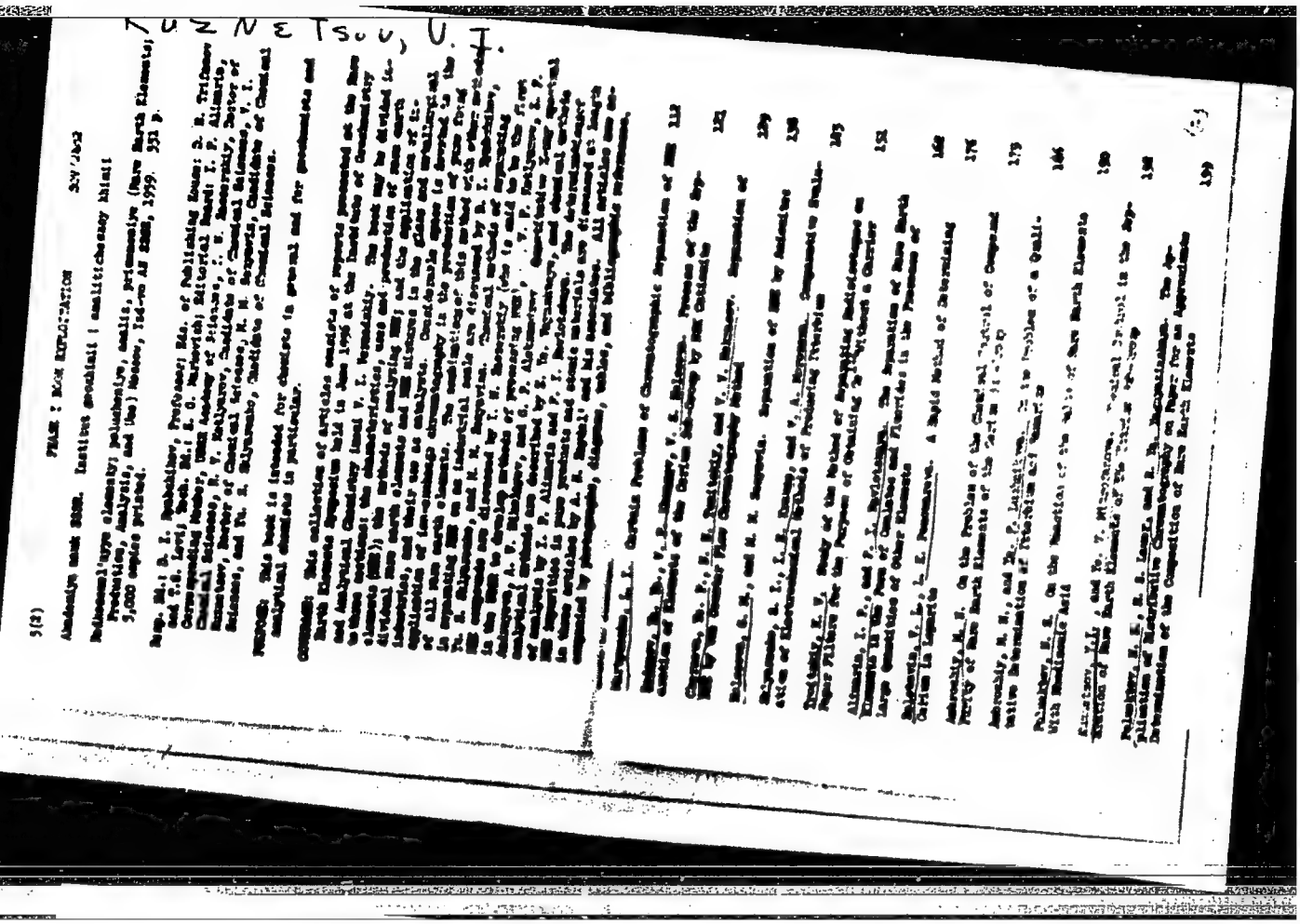
PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 10, pp 1178-1179 (USSR)

ABSTRACT: The decomposition of silicate materials is usually carried out by means of a treatment with hydrofluoric acid or with a soda melt. A silicate decomposition by heating with hydrochloric acid under pressure is described as well in the literature (Ref 1). In the present case the method of acid decomposition of silicates according to Pucci and Maffei (Putstsi and Maffi) (Ref 2) was used. The method is quick and simple, the metal extraction quantitative, and no destruction of the ampules in which the reaction was carried out under pressure was found to occur. An inner diameter of the ampules of 12 - 15 mm in the case of a wall thickness of 2 - 3 mm is recommended. The ampules are to be filled up no higher than 1/3 of the volume. The decomposition is to take place

Card 1/2

at 180 - 200°. If the silicate weighed in is ground not more coarsely than 200 mesh a heating up to 180 - 200° within 2 hours guarantees a complete decomposition of the material. In the case of heating up to 300° during 2 hours with 11 - 12 n hydrochloric acid even several oxides which are difficult to dissolve decompose. The given course of the analysis shows among other things that thorium is determined colorimetrically by means of the reagent "arsenazo" and uranium according to the luminescence method. Tables of the obtained results are given. There are 1 figure, 2 tables, and 3 references, 2 of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo Akademii nauk SSSR (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, AS USSR)



S/081/61/000/024/022/086
B138/B102

AUTHOR: Kuznetsov, V. I.

TITLE: Study of the chemical composition of minerals of the columbite-tantalite series and the geochemistry of tantalum and niobium

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 24, 1961, 129, abstract 24G36 (Nauchn. zap. L'vovsk. politekhn. in-t, no. 53, 1959, 188 - 221)

TEXT: 155 analyses of tantalites and columbites published in the course of about 100 years have been tabulated. The average percentage concentrations are (brackets show number of analyses): columbites - MnO (54) 6.73, FeO (51) 12.83; tantalite-columbites (18) - MnO 6.45, FeO (18) 11.6; columbite-tantalites (22) - MnO 8.08, FeO 8.69; tantalites - MnO (25) 4.03, FeO (31) 11.69; average for the columbite-tantalite series: MnO 6.3, FeO 11.55. Ferriferous tantalites usually occur more frequently, but they do not form commercial deposits. In the large deposits manganese varieties predominate. This is attributed to the fact that, at earlier stages in the development of pegmatites Fe combined with B remains in

Card 1/2

Study of the chemical...

S/081/61/000/024/022/086
B138/B102

small quantities in turmalines, and is substituted in the manganese tantalo-niobates subsequently formed. The occurrence of essentially ferriferous or manganiferous varieties is not due to the limited miscibility of Fe and Mn, but to the presence of one or the other element in the pegmatite forming substances during the precipitation of Ta and Nb. [Abstracter's note: Complete translation.]

Card 2/2

5(2, 3)

AUTHOR: Kuznetsov, V.I., Professor

SOV/63-4-2-17/39

TITLE: The Application of Organic Reagents in Inorganic Analysis

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1959, Vol 4, Nr 2, pp 249-255 (USSR)

ABSTRACT: There are 2,500 organic compounds used as organic reagents. The analogs of known reagents, like 8-oxyquinoline, 1,10-phenanthroline, etc are being investigated. The selectivity of characteristic atomic groups is explained by their geometric configuration or the dimensions of their reacting ions [Ref 19]. Special atomic groups which form colored compounds with many elements have been found. Complexon III, Alizarin S for photometric investigations, methyl-violet and crystal-violet as ingredients of organic coprecipitators of U, Mo, W, etc [Ref 28], Arsenazo for photometric determination of Al, Zr and Th [Ref 29-32], Tiron (pyrocatechin-disulfo-acid) for the analysis of Mo, Nb, etc, and other reagents are mentioned. As organic precipitators dimethyloxalate, dimethylsulfate and other esters are used. Sodium is precipitated by 1-amino-naphthalene-8-sulfo-acid in the form of the magnesium salt [Ref 47]. Organic coprecipitating agents are very efficient [Ref 28, 56].

Card 1/3

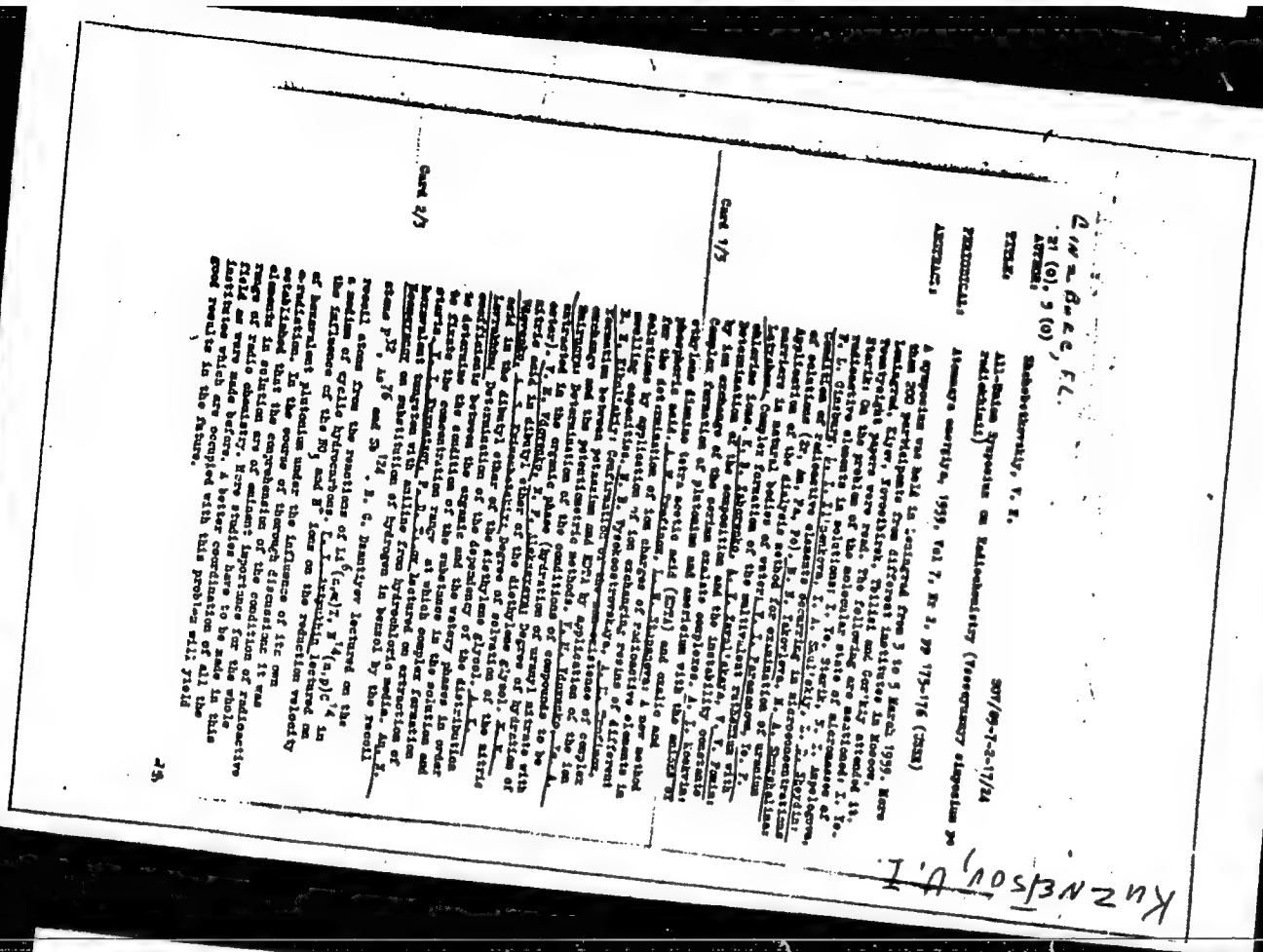
They are precipitates of low solubility formed from heavy organic cations furnished by methyl-violet, methylene-blue, etc, and anions from methyl-orange and compounds containing sulfo-groups. The quantitative analysis of uranium in sea water at a dilution of $1 : 1 \cdot 10^{10}$ is possible by means of the rhodanide of methyl-violet [Ref 57]. Extraction in analytic chemistry is dealt with in [Ref 60]. Iron is extracted from hydrochloric acid solutions by isoamylacetate and various ketones instead of the inflammable diethyl ether. Uranyl nitrate is extracted by oxygen-containing solvents, like methylethylketone and tributyl-phosphate. "Alberon", a dye of the triphenylmethane series, is used in the photometric determination of beryllium and aluminum [Ref 78]. It has been found that the indophenol reaction is specific for free chlorine [Ref 80]. "Fenazo" is a reagent for magnesium [Ref 81]. For the fluorometric determination of gallium 2,4-dioxybenzene-<1-azo->-2-oxy-naphthalene-4-sulfo-acid has been proposed [Ref 86]. A new reagent is 8 mercaptoquinoline which is suitable for the analysis of hydrogen sulfide and ammonium sulfate [Ref 93]. For complexonometric titrations many new metal indicators have been recently developed [Ref 34, 98].

Card 2/3

The indicator PAN is used for Cu, Ni, Co, Zn, Pb, Fe, Mn, Mg, Pb [Ref 100], Th [Ref 101].

There are 108 references, 46 of which are Soviet, 36 English, 16 German, 5 Czechoslovak , 3 American, 1 Belgian and 1 Swiss.

Card 3/3



Kuznetsov, V.I.

BUSEV, A.I.; KUZNETSOV, V.I., prof.; SHILOV, Yu.M., kand. farmatsevticheskikh nauk; TARASENKO, M.I., kand. khim. nauk

"Analytical chemistry" by F.M.Shemiakin, A.N.Karpov, A.N. Brusentsov. Reviewed by A.I.Busev and others. Apt.delo 8 no.2:90-93 Mr-Ap '59. (MIRA 12:5)
(CHEMISTRY, ANALYTICAL) (SHEMIAKIN, F.M.) (KARPOV, A.N.) (BRUSENTSOV, A.N.)

5(2),5(3)

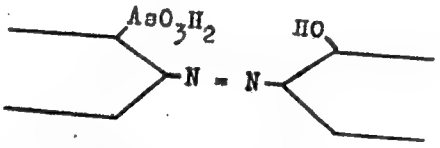
AUTHOR: Kuznetsov, V. I.

TITLE: Color Reactions of Uranium and Thorium With o'-Arsono- 2 -Hydroxy-Azo Compounds (Tsvetnyye reaktsii urana i toriya s o'-arsono-o'-oksi-azosoyedineniyami)

SOV/75-14-1-2/32

PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 1, pp 7-16 (USSR)

ABSTRACT: The most interesting among organic reagents allowing color reactions with uranium and thorium, are those containing the grouping:



(1).

The long known reagents thoron and arsen-azo also belong to them. In the present paper 15 other compounds are investigated, that contain this characteristic atomic grouping. The new reagents thoron II (Diphenyl-3, 3'-diarsonic acid-4,4'-bis-[(-azo-1)-2-hydroxy naphthalene-3,6-disulfonic acid])

Card 1/3

and arsen-azo II (diphenyl-3,3'-diarsonic acid-4,4'-bis [(-azo-7)-1,8-dihydroxy naphthalene-3,6-disulfonic acid]) contain the grouping (1) twice. Their molecules are the duplication of those of thoron or arsen-azo, respectively. Arsen-azo II and thoron II form more stable complexes than is the case with arsen-azo and thoron. Consequently, coloring occurs in stronger acid solutions and in the presence of larger quantities of sulfates, phosphates and other masking complex formers, than is the case with arsen-azo and thoron. The tint in coloring is not much different between arsen-azo II and thoron II on the one side, and arsen-azo and thoron on the other. Regarding intensity of color reaction, aminothoron (4-aminobenzene-2-arsonic acid-(1-azo-1)-2-hydroxy naphthalene 3,6-disulfonic acid) is to be specially mentioned as a reagent among the compounds investigated. In an acid medium with thorium it yields violet coloring. The solutions of the reagent itself are colored yellow-brown. The reason of the strong color intensity in this reagent lies in the fact that this compound is a particularly marked dipole. In consequence of the simultaneous presence of an amino and a hydroxyl group the

solutions of the reagent itself are intensely colored with a small p_H-value. Thorium reacts with the reagent in a strong acid solution, in which connection both the amino group and the hydroxyl group are ionized. The syntheses of the compounds investigated, most of which are not described in the publications, are specified in the present paper. The synthesis of most of these compounds took place by diazotizing and subsequent coupling. The present paper was submitted on March 12, 1957 to the meeting of the scientists' council of the Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy of the Academy of Sciences, USSR. The meeting itself was dedicated to the memory of V. I. Vernadskiy. There are 1 figure, 7 tables, and 42 references, 22 of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy of the Academy of Sciences, USSR)

SUBMITTED: February 20, 1958

5(2), 5(3)

AUTHORS: Kuznetsov, V. I., Seryakova, I. V.

SOV/75-14-2-3/27

TITLE: Low-melting Extracting Agents in Analytical Chemistry (Legkoplavkiye ekstragenty v analiticheskoy khimii)

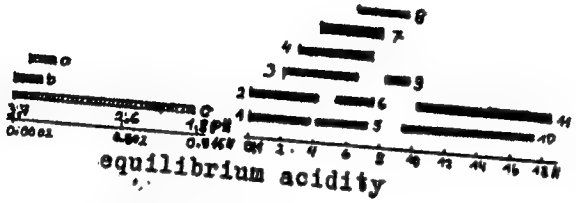
PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 2, pp 161-166 (USSR)

ABSTRACT: In the present paper a list of low-melting solid mixtures of extracting agents which are suited for work at various pH values is given. The extracting agents mentioned were selected in connection with investigations of the extraction of iron (as $FeCl_4^-$) and cadmium (as CdJ_4^-). Iron and cadmium were selected because the complex anions mentioned are stable in wide ranges of pH. The good values of the distribution coefficients which were obtained for the two elements suggest that the extracting agents investigated are suited also for the extraction of other elements on the condition that they form easily extractable complex anions in the corresponding pH range. By using solid low-melting extracting agents the separation of elements is simplified because separation may be carried out in a simple flask without using a separating

Card 1/4

funnel. The following oxygen-containing solvents were investigated in a mixture with approximately 25% paraffin: methyl-ethyl ketone, cyclohexanone, diethyl ketone, methyl-butyl ketone, methyl-isobutyl ketone, propyl acetate, butyl acetate, amyl acetate, butyric acid ethyl ester, isovaleric acid ethyl ester, and benzoic acid ethyl ester. Due to the addition of paraffin all these compounds form solid or semi-solid mixtures which become easily fusible already if the temperatures are only slightly increased. The mixtures described are suited for extractions from 0.1 N to 18 N acid solutions. In the case of the extraction from 0.1 - 5 N acid solutions it is appropriate to add alkali salts of the corresponding halide which forms the anion complex in order to increase the distribution coefficient. Further, low-melting amines and mixtures of liquid amines with paraffin were investigated: α-naphthylamine, mixtures of dimethyl aniline and paraffin, and of o-chloro aniline and paraffin. These mixtures are especially suited for the extraction from weakly acid solutions (pH 1.8 - 3.7). They are, however, easily oxidizable. Thus, e.g. by using these mixtures iron cannot be extracted because under the conditions of extraction it is reduced to the bivalent stage which cannot be extracted. All mixtures

investigated, the pH ranges of their applicability and the corresponding distribution coefficients for cadmium and iron are tabulated. A further table contains the applicability of the mixtures to the various pH-ranges:



a - α-naphthylamine
b - dimethyl aniline
c - o-chloroaniline

1 - methyl-ethyl ketone
2 - cyclohexanone
3 - diethyl ketone
4 - methyl-isobutyl ketone
5 - methyl-butyl ketone
6 - propyl acetate
7 - butyl acetate
8 - ethyl butyrate
9 - isoamyl acetate
10 - ethyl-isovalerianate
11 - ethyl benzoate

Card 3/4

The production of the extraction mixtures is described in detail in this paper. There are 3 tables and 8 references,

Low-melting Extracting Agents in Analytical Chemistry SOV/75-14-2-3/27

4 of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moskva
(Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy AS USSR, Moscow)

SUBMITTED: February 3, 1958

Card 4/4

5(2)

AUTHORS: Kuznetsov, V. I., Petrova, T. V. SOV/75-14-4-3/30

TITLE: Thermospectrophotometric Determination of Rare Earths in the Presence of Thorium

PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 4, pp 404 - 410 (USSR)

ABSTRACT: Direct chemical determination of rare earths in the presence of thorium, which has been impossible so far, can be carried out with the help of thermospectrophotometry. Thermospectrophotometry is based on the fact that the same sample is photometrically recorded at two different temperatures. If two elements only are present in the solution, and if at a change of temperature the light absorption of the complexes of these two elements changes unequally, two different values of the optical density are obtained for both temperatures, and the content of each element can be determined from two equations with two unknowns. Figure 1 shows graphically the influence exercised by the pH-value on the color intensity of solutions of complex compounds which are formed by reagents of the R-OH type. With increasing temperature, the maximum of these curves

Card 1/3

shifts towards smaller pH-values. With an increase of the pH-value, the intensity of the coloring reduces, probably as a result of the decrease of the intramolecular dissociation of the cyclic complexes rather than in consequence of a decomposition of the complexes, as sometimes put forward. When heating a complex solution with a pH-value to which a point on the ascending branch of the curve corresponds, the intensity of the coloring increases. Contrary to it, at a pH-value to which a point on the descending branch of the curve corresponds, the color intensity of the hot solution is less than that of the cold solution. For the thermospectrophotometric determination of rare earths in the presence of thorium, the authors used arsenazo (benzene-2-arsonic acid-⟨1-azo-7⟩-1,8-dihydroxynaphthalene-3,6-disulfonic acid) as a reagent, which forms soluble complex compounds with thorium and rare earths. When heating such complex solutions with pH 3.7 from 20° to 80°, the optical density of the thorium complex does not change at 576 mμ, while the optical density of the complexes of rare earths increases by 1.9-2.9 times (lanthanum and ytterbium, respectively). If the substances are photometri-

Thermospectrophotometric Determination of Rare Earths in the Presence of Thorium SOV/75-14-4-3/30

cally recorded at 20° and 80°, and a calibration curve is used, it is possible to determine quantitatively rare earths in thorium preparations, beginning with contents of 1.2% (counted as oxides). The error in the determination is 7% at 1.2% TR_2O_3 in ThO_2, and 1% at 15% TR_2O_3. A diagram of the apparatus used for the determination is shown and explained in the paper, a hot-stage cuvette is also shown. The results of the thermospectrophotometric determination of the sum of rare earths in the presence of thorium are shown in a table. The accomplishment of the determination and the plotting of the calibration curve are described in all details. There are 7 figures, 1 table, and 22 references, 8 of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moskva (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, AS USSR, Moscow)

SUBMITTED: May 28, 1958

Card 3/3

KUZNETSOV, V. I.

AUTHOR: Klimovich, G. K. SOV/75-14-4-30/30

TITLE: Section of Analytical Chemistry of the VIII Mendeleyev Congress on General and Applied Chemistry

PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 4, pp 511-512 (USSR)

ABSTRACT: Approximately 300 persons participated in the work of the Department of Analytical Chemistry, among them representatives of various scientific research institutes, higher schools and industrial enterprises in Russia, scientists from China, Bulgaria, the CSR, Poland, Hungary, and Italy. Approximately 70 reports were heard. In his opening speech I. P. Alimarin reported on the achieved results and on modern problems of analytical chemistry. I. V. Tananayev reported on the application of physico-chemical analysis in heterogeneous systems for the solution of a series of problems of analytical chemistry. V. I. Kuznetsov reported on modern aims in the use of organic reagents; A. K. Babko showed at the example of halide and thiocyanate complexes the correlation between the stability of complexes and the position of the corresponding central atoms in the periodic

Card 1/4

system. V. M. Peshkova and V. M. Bochkova lectured on the stability of oximates of Cu, Co, and Ni as depending on the structure of the oxime molecule. V. V. Tarasova lectured on the double character of reaction of some compounds in the formation of complexes. The problem of the application of heteropolyacids in analytical chemistry was dealt with in the lectures of A. P. Shakhova and co-workers, and A. I. Kokorin and N. A. Polotebnova. A large number of lectures dealt with the use of new organic reagents in analysis: A. I. Busev and M. I. Ivanyutin reported on the application of dialkyl and diaryl dithiophosphoric acid for the separation of elements, A. I. Portnov used aryl arsenic acid and aryl phosphinic acid. R. P. Lastovskiy and his co-workers treated some properties of new complexons. The lectures of V. A. Nazarenko, G. G. Shitareva and A. I. Konenenko dealt with the photometric determination of a series of elements using fluorine derivates. A. I. Cherkesov lectured on the use of halochromatism in analytical chemistry. R. M. Dobkina and T. V. Malyutina lectured on the determination of tantalum using differential spectrophotometry. Ye. I. Morachevskiy and L. A. Stolyarova reported on new highly sensitive analysis methods using an ultraviolet microscope. Several lectures dealt with methodical and theoretical problems of spectrum analysis (S. V. Zakhariy and G. A. Shevrin; N. Ye. Varshteyn and

Card 2/4

co-workers). N. S. Poluektov and M. N. Nikonova treated the perfection of flame photometry. Several lectures dealt with the determination of elements by polarography (S. I. Sinyakova; E. B. Rozhdestvenskaya and I. A. Yerevov; Ye. P. Gokhshteyn). New results in using fixed electrodes were reported by A. D. [illegible] and Yu. S. Lyalikov and co-workers. The lecture of N. I. Mal'tseva and F. B. Fillipova[?] treated the use of amperometric titration with two electrodes in the chemistry of uranium and thorium. N. M. Semyavin showed possibilities of predicting the conditions of chromatographic separation of elements based on their position in the periodic system. T. A. Belyavskaya reported on the use of ion exchange in the investigation of the state of substances in solutions. A. S. Vernidub and V. I. Petrashen' lectured on the chromatographic separation of a series of elements. N. G. Polyanskiy reported on adapting the properties of ion exchanger resins. P. M. Shevyakin and associates reported on the chromatographic proof of sulfanilamide preparations in liquids of the organism. G. L. Starobinets and associates treated

Card 3/4

the application of high polymers in chromatographic analysis. The lecture of A. A. Zhukhovitskiy and N. M. Turkel'taub, O. Shay dealt with gas chromatography. Several lectures treated the use of radioactive isotopes for the chromatographic investigation of complex formation (D. I. Ryabchikov and associates), for the investigation of the co-precipitation mechanism of ions of rare metals with sulfides (N. A. Rudnev) and for determining rare elements by means of isotope dilution (I. P. Alimarin, G. N. Bilimovich). In the field of elementary organic microanalysis the lectures of M. O. Korshun, N. E. Gel'man and V. A. Klimova with associates have to be mentioned, who treated the elaboration of rapid micromethods for the simultaneous determination of several elements from one weighed portion of boron, fluorine and silicium-organic compounds.

vy

05714
SOV/32-25-10-3/63

5 (2)
AUTHORS: Kuznetsov, V. I., Okhanova, L. A.

TITLE: Volumetric Determination of Gamma Quantities of Rare Earth Elements

PERIODICAL: Zavodskaya laboratoriya, 1959, Vol 25, Nr 10, pp 1162-1165 (USSR)

ABSTRACT: Complexometric methods of determining the rare earth elements (Refs 1-4) are indicated in publications. In the present case, citric acid and the "arsenazo" indicator are used instead of trilon B for a determination of this kind. At a content of 10-20 γ, and more, of these elements, the mean relative error did not amount to more than 1-2%. Titration is carried out until attaining an intermediate coloring, the end of titration being ascertained by means of a comparative sample. For the end of titration it is most convenient to choose the intermediate coloring that corresponds to a 50% binding of the reagent to the complex compound ("50% coloring"). The method of determination was developed in two variants. Titration according to the first variant is carried out at certain optimum pH-values for each element. For La, Ce, Sm, and Yb, the optimum pH-values are 6.5, 6.3, 5.8, and 4.8; for a mixture of the "yttrium group" (57% Y, 0.7% La, 1.5% Ce,

Card 1/3

Volumetric Determination of Gamma Quantities of Rare Earth Elements

05714
SOV/32-25-10-3/63

0.9% Nd, 0.3% Sm, 1.8% Gd, 0.5% Tb, 6.3% Dy, 1.9% Ho, 7.5% Er, 6.8% Yb, 0.7% Lu) pH = 6.2 (Table 1). As pure preparations of all rare earth elements are not always available, the second titration variant was developed to determine any rare earth element by means of a preparation of one of these elements. The latter preparation is used to fix the titer of the citric acid solution and to prepare the solution of the standard sample. This titration should be carried out at the optimum pH for the respective element, and a correction with respect to the indicator error should be introduced (Table 2). Determination results obtained by the second variant for Nd, Sm, and Er (by use of La for titration and preparation of the standard sample) (Table 3), as well as the courses of analysis for the two variants, are indicated. The colorimetric measurement of the indicator was carried out on the photocolorimeter of type FEK-N-54 (with green light filter Nr 5). There are 2 figures, 3 tables, and 10 references, 2 of which are Soviet.

Card 2/3

5 (3)

AUTHORS: Kuznetsov, V. I., Nemodruk, A. A. SOV/79-29-3-55/61

TITLE: Syntheses With Complex Compounds (Sintezy s kompleksnymi soyedineniyami). IV. Synthesis of the Phenolindophenol-3,3'-Dicarboxylic Acid (IV. Polucheniye fenolindofenol-3,3'-dikarbonovoy kisloty)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 3, pp 1008-1012 (USSR)

ABSTRACT: The presence of a so-called intramolecular dissociation can under certain conditions in cyclic salts considerably influence their reactivity (Refs 1,2). Such cyclic salts may develop an increased or even new reactivity compared with their initial product. The behavior of the cyclic aluminum salt of the salicylic acid described in the present paper serves as an example. The salicylic acid itself or the sodium salicylate do not form in the case of the action of the diluted nitric acid the products to which the cyclic aluminum salicylate leads. If a mixture of salicylic acid and aluminum nitrate is heated it assumes an intensive blue color. The intensity of the color reaches its maximum when the quantity of the aluminum nitrate is four times higher than that of the salicylic acid. It depends as well to a great extent on the concentration conditions. In

Card 1/2

the case of water is e.g the 8-10 fold quantity the optimum condition in the ratio to the salicylic acid. The percentage, the temperature, and the time of heating are important as well. The best results were obtained at 100° during 4-5 minutes. After cooling down and acidification with hydrochloric acid the colored product formed in the given reaction was separated and was determined as phenolindophenol-3,3'-dicarboxylic acid (yield 56%) which has hitherto not been known. Beside this acid the hydroquinone-carboxylic- and 5-nitrosalicylic acid were precipitated (12 and 10% correspondingly). The properties of the synthesized compounds are described and their reaction mechanism is suggested. There are 1 figure and 7 references, 6 of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii Akademii nauk SSSR (Institute of Geochemistry and Analytical Chemistry of the Academy of Sciences, USSR)

SUBMITTED: February 5, 1958

5.3610

75686
SOV/80-32-10-35/51

AUTHORS: Kuznetsov, V. I., Savvin, S. B.

TITLE: Synthesis of Dinitrobenzidine and Analytical Reagents "Arsenazo II," "Toron II," and "Phenazo"

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 10, pp 2329-2332 (USSR)

ABSTRACT: Biphenyl-4,4'-diarsonic acid-3,3'-bis [< -azo-2 > -1, 8-dihydroxynaphthalene-3,6-disulfonic acid] (Arsenazo II), and biphenyl-4,4'-diarsonic acid-3,3'-bis [<-azo-1> -2-hydroxynaphthalene-3,6-disulfonic acid] (Toron II) are very valuable analytical test reagents for uranium, thorium, rare-earth metals, and for some other elements (ZhAKh, 14, 8, 1958). 3,3'-Dinitrobiphenyl-4,4'-bis [<-azo-4>phenyl] (Phenazo) is a test reagent for magnesium (ZL, 24, 1053, 1958). The syntheses of "Arsenazo II" and "Toron II" were published for the first time. The improved preparation of the starting material 3,3'-dinitrobenzidine was previously published (J. Chem. Soc., 245, 1928; 4181, 1953). 3,3'-Diaminobiphenyl-

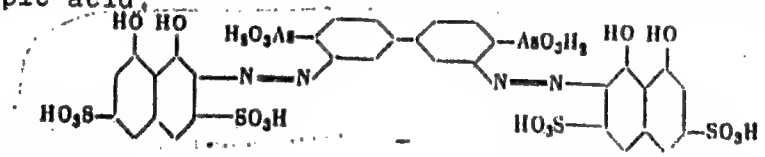
Card 1/4

Synthesis of Dinitrobenzidine and Analytical Reagents "Arsenazo II," "Toron II," and "Phenazo"

75686
SOV/80-32-10-35/51

4,4'-diarsonic acid was prepared by bis-diazotization of 3,3'-dinitrobenzidine with nitrosyl-sulfuric acid.

The reaction with arsenous acid was carried out in the presence of $NaHCO_3$ and at 0^o. The obtained 3,3'-dinitrobiphenyl-4,4'-diarsonic acid was reduced with ferrous salts in an alkaline medium. "Arsenazo II" was obtained by coupling of bis-diazotizated 3,3'-diaminobiphenyl-4,4'-diarsonic acid (I) with chromotropic acid.

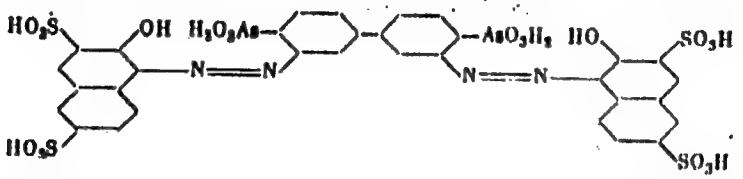


Card 2/4

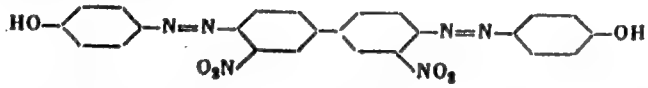
Synthesis of Dinitrobenzidine and Analytical Reagents "Arsenazo II," "Toron II," and "Phenazo"

75686
SOV/80-32-10-35/51

"Toron II" was obtained by coupling of I with R-salt.



"Phenazo" was obtained by coupling of bis-diazotizated 3,3'-dinitrobenzidine with phenol.



There are 8 references, 2 Soviet, 1 U.S., 1 German, 4 British. The 5 U.S. and British references are: Cheng, K. L., Anal. Chem., 28, 1738 (1956); Hirst, H. R.,

Card 3/4

Synthesis of Dinitrobenzidine and Analytical Reagents "Arsenazo II," "Toron II," and "Phenazo"

75686
SOV/80-32-10-35/51

Cohen, J. B., J. Chem. Soc., 831 (1895); Fevre, R. J., Turner, E. E., 245 (1928); Barker, C. C., Casson, F. D., 4181 (1953); Hodgson, H. H., Walker, J., 1620, (1933).

SUBMITTED: May 21, 1958

Card 4/4

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210008-1"

KOREMMAN, Izrail' Mironovich; VINOGRADOV, A.P., akademik, glavnyy red.; BUSHEV, A.I., prof., red.toma; ALIMARIN, I.P., red.; BABKO, A.K., red.; VAYNSHTEYN, E.Ye., red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., prof., red.; PALEY, P.N., red.; RYABCHIKOV, D.I., red.; TANANAYEV, I.V., red.; CHERNIKHOV, Yu.A., red.; VOLYNETS, M.P., red.izd-va; KASHINA, P.S., tekhn.red.

[Analytical chemistry of thallium] Analiticheskaia khimiia talliia. Moskva, Izd-vo Akad.nauk SSSR, 1960. 170 p. (MIRA 14:3)

(Thallium--Analysis)

RYABCHIKOV, Dmitriy Ivanovich; GOL'BRAYKH, Yevgeniya Kas'yanovna; VINOGRADOV, A.P., akademik, glavnyy red.; ALIMARIN, I.P., red.toma; PALEY, P.N., red.toma; BABKO, A.K., red.; BUSEV, A.I., red.; VAYNSHTEYN, E.Ye.,red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., red.; TANANAYEV, I.V.,,red.; CHERNIKHOV, Yu.A., red.; TRIFONOV, D.N., red.izd-va; POLENOVA, T.P., tekhn.red.

[Analytical chemistry of thorium] Analiticheskaia khimiia toriia. Moskva, Izd-vo Akad.nauk SSSR, 1960. 295 p. (MIRA 13:10)
(Thorium--Analysis)

KUZNETSOV, V.I.; TITOV, P.D.

Aniline extraction of elements in the form of salts from anions containing oxygen. Izv.Sib.otd.AN SSSR no.3:58-64 '60.
(MIRA 13:10)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.Vernadskogo.
(Tungsten) (Molybdenum) (Aniline)